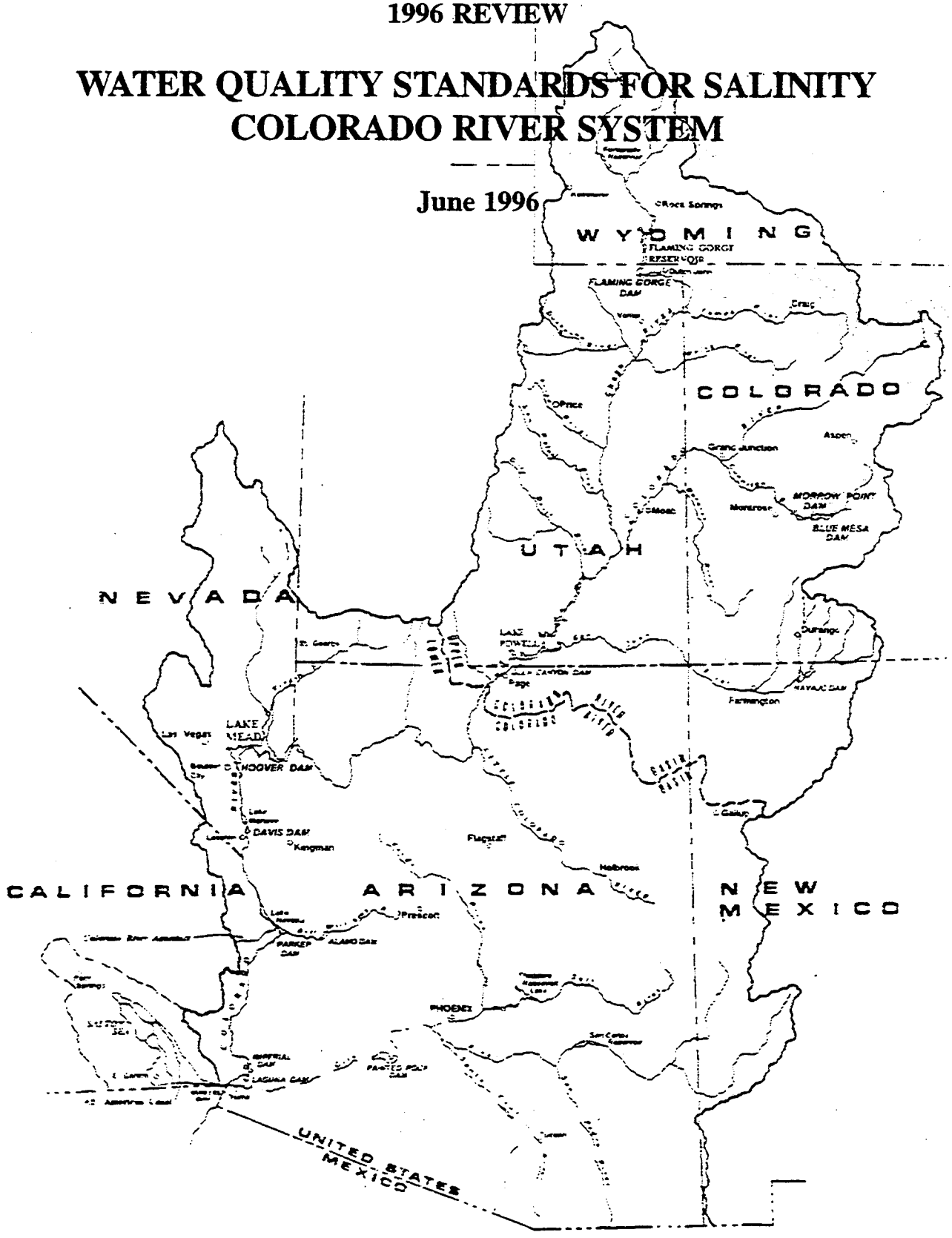
1996 REVIEW

# WATER QUALITY STANDARDS FOR SALINITY COLORADO RIVER SYSTEM

June 1996




Colorado River Basin Salinity Control Forum

# 1996 REVIEW

# WATER QUALITY STANDARDS FOR SALINITY
# COLORADO RIVER SYSTEM

**June 1996**

Prepared by
Colorado River Basin Salinity Control Forum

## COLORADO RIVER BASIN SALINITY CONTROL FORUM
## MEMBERS

**ARIZONA**

Timothy J. Henley, Chief, Surface Water Management
Department of Water Resources
Wayne K. Hood III, Environmental Program Manager
Department of Environmental Quality
George W. Barr, Board Member
Central Arizona Water Conservation District

**CALIFORNIA**

Gerald R. Zimmerman, Executive Director
Colorado River Board of California
Walter G. Pettit, Executive Director
State Water Resources Control Board
Duane L. Georgeson, Executive Assistant to General Manager
The Metropolitan Water District of Southern California

**COLORADO**

Daries C. Lile, Director
Colorado Water Conservation Board
Department of Natural Resources
J. David Holm, Director
Water Quality Control Division
Department of Public Health and Environment
David W. Robbins, Attorney at Law

**NEVADA**

Janet F. Rogers, Chairperson
Colorado River Commission of Nevada
Lewis H. Dodgion, Administrator
Division of Environmental Protection
Peter G. Morros, Director
Department of Conservation and Natural Resources

**NEW MEXICO**

William J. Miller, Interstate Stream Engineer
New Mexico Interstate Stream Commission
Thomas C. Turney, State Engineer
New Mexico State Engineer's Office

**UTAH**

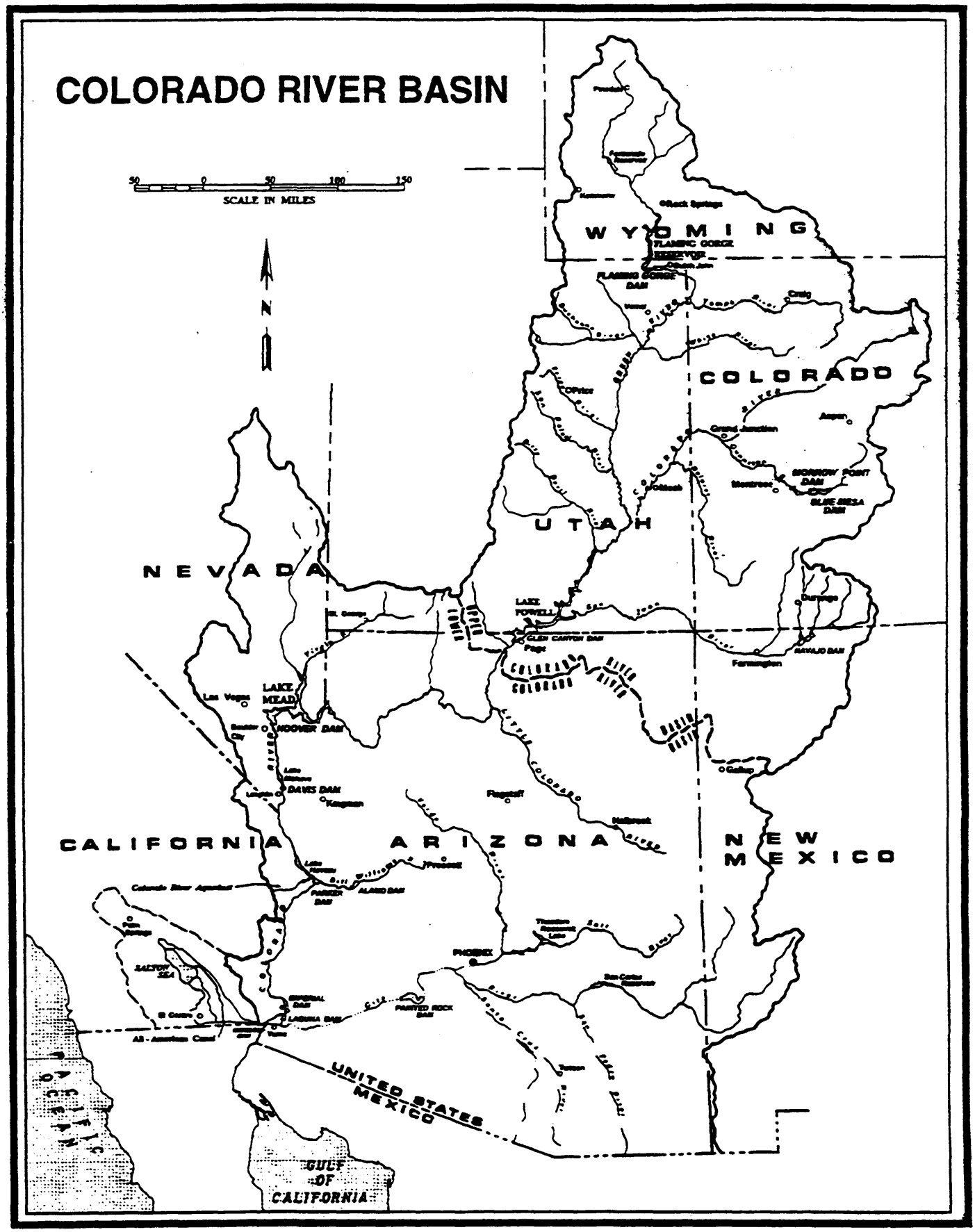
D. Larry Anderson, Director
Division of Water Resources
Department of Natural Resources
Jay B. Pitkin, Assistant Director
Division of Water Quality
Department of Environmental Quality

**WYOMING**

Gordon W. Fassett, State Engineer
State Engineer's Office
Gary Beach, Administrator
Division of Water Quality
Department of Environmental Quality
Dan S. Budd, Interstate Stream Commissioner

**FORUM**

Jack A. Barnett, Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, Utah 84010-6232


COLORADO RIVER BASIN
50 0 50 100 150
SCALE IN MILES
N
WYOMING
COLORADO
UTAH
NEVADA
CALIFORNIA
ARIZONA
NEW MEXICO
FLAMING GORGE DAM
BLUE MESA DAM
MORROW POINT DAM
LAKE POWELL
GLEN CANYON DAM
NAVAJO DAM
LAKE MEAD
HOOVER DAM
DAVIS DAM
PARKER DAM
ALAMO DAM
PHOENIX
LAGUNA DAM
PAINTED ROCK DAM
UNITED STATES
MEXICO
PACIFIC OCEAN
GULF OF CALIFORNIA

## TRANSMITTAL LETTERS

The Federal Water Pollution Control Act requires that at least once every three years the Colorado River Basin states review water quality standards relating to the salinity of the waters of the Colorado River. The states collectively initiated this review under the auspices of the Colorado River Basin Salinity Control Forum, prepared a preliminary report; and after holding public meetings, the Forum prepared a final report.

Upon the Forum's adoption of the final report, it is transmitted by letter to the governors of the individual states for their independent action. The following governors in each of the seven Colorado River Basin states shall receive this report:

Honorable Fife Symington
Governor of Arizona
Statehouse
Phoenix, AZ 85007

Honorable Gary Johnson
Governor of New Mexico
State Capitol
Santa Fe, NM 87503

Honorable Pete Wilson
Governor of California
State Capitol
Sacramento, CA 95814

Honorable Mike Leavitt
Governor of Utah
State Capitol
Salt Lake City, UT 84114

Honorable Roy Romer
Governor of Colorado
State Capitol
Denver, CO 80203

Honorable Jim Geringer
Governor of Wyoming
State Capitol
Cheyenne, WY 82002

Honorable Robert Miller
Governor of Nevada
State Capitol
Carson City, NV 89701

# SUMMARY

Section 303 of the Clean Water Act requires that water quality standards be reviewed from time to time, but at least once during each three-year period. Accordingly, the seven-state Colorado River Basin Salinity Control Forum (Forum) has reviewed the existing state-adopted and Environmental Protection Agency (EPA)-approved water quality standards for salinity consisting of numeric criteria and a plan of implementation for salinity control for the Colorado River System. Changes in hydrologic conditions and water use within the Colorado River Basin have been evaluated, and the 1996 Review presents the recommended revisions to the plan of implementation which are to be submitted to each of the Basin states for consideration at a public hearing prior to adoption.

The Forum recommends no change in the numeric salinity criteria at the three lower main stem stations. The numeric criteria at these stations will remain:

| Station | Salinity in mg/L[1] |
|---|---|
| Below Hoover Dam | 723 |
| Below Parker Dam | 747 |
| Imperial Dam | 879 |

The plan of implementation as set forth in this Review is designed to meet the objective of maintaining the salinity concentrations at or below the numeric criteria while the Basin states continue to develop their compact-apportioned waters. The plan is based on maintaining the numeric criteria under a long-term mean water supply of 15 million acre-feet annually. The Forum recommends that the plan of implementation described in this report be carried out. The plan of implementation includes:

1. Completion of Reclamation, BLM and USDA salinity control measures to the extent that each unit remains viable and appropriately cost-effective.

2. Implementation of the Forum's recommended and adopted policies for effluent limitations, principally under the National Pollutant Discharge Elimination System (NPDES) permit program established by Section 402 of the Clean Water Act as amended. The implemented policies (included in Appendix B of this Review) are the following:

   "Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program;"

[1]Flow-weighted average annual salinity.

"Policy for Use of Brackish and/or Saline Waters for Industrial Purposes;"

"Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Intercepted Ground Water;" and

"Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Fish Hatcheries."

3. Implementation of non-point source management plans developed by the states and approved by EPA.

Item 1 of the plan of implementation listed above is to be implemented by federal agencies in conjunction with state, local and private participants. The Forum works jointly with federal agencies on developing the units and measures to be implemented. The Forum also urges Congress to ensure that the funds necessary to successfully implement all phases of this plan of implementation are appropriated as needed. Items 2 and 3 above are primarily implemented by each of the Basin states.

The major components of this Review's plan of implementation are the federal programs. Table 1 summarizes the salinity control achieved by the federal participants under the Program's original authorities and the salinity control measures which must be implemented in order to meet the goal of approximately 1.48 million tons of salt-load reduction annually by 2015. These federal programs are described in detail in Chapter 4 of this Review.

**Table 1**
**Colorado River Basin Salinity Control Program**
**Plan of Implementation**
**By 2015**
(Values in Tons of Salt Load Reduction Per Year)

| AGENCY | MEASURES IN PLACE | POTENTIAL NEW MEASURES | TOTAL |
|---|---|---|---|
| **Bureau of Reclamation** | 375,500 | 480,000 | 855,500 |
| **U.S. Department of Agriculture** | 212,500 | 320,000 | 532,500 |
| **Bureau of Land Management** | 33,400 | 55,200 | 88,600 |
| **TOTAL** | 621,400 | 846,200 | 1,476,600 |

The plan of implementation is designed to control enough salt to maintain the numeric criteria under a long-term mean water supply of 15 million acre-feet per year. It is recognized that the river system is subject to highly variable flows. Consequently, salinity will vary from year to year and may temporarily exceed the adopted numeric criteria in some years and remain well below the criteria in others. The federal regulation provides for such temporary increases above the numeric criteria.

Current salinity concentrations at the three criteria stations are:

| Station | Numeric Criteria in mg/L[2] | 1995 Salinity Concentration in mg/L[3] |
|---|---|---|
| Below Hoover Dam | 723 | 654 |
| Below Parker Dam | 747 | 661 |
| Imperial Dam | 879 | 787 |

Based on the available data, the Forum concludes that the measured salinity will not exceed the numeric criteria during the next three years. The plan of implementation adopted herein by

[2]Flow-weighted average salinity.

[3]Flow-weighted data based upon provisional records.

the Forum provides for the control of about 1,476,600 tons of salt load reduction annually by the year 2015.

Should more water development projects be completed than are projected to occur before control measures are identified or brought on line, temporary increases above the numeric criteria could result. However, these increases will be deemed in conformance with the standards if appropriate salinity control measures are included in the plan.

Increases above the criteria as a result of below normal annual river flows and/or low reservoir storage conditions will also be considered in conformance with the standards, provided that when river flows return to normal and satisfactory reservoir conditions prevail, concentrations will then be at or below the criteria level.

The Forum has reviewed the impact of the program on projected salinities and finds that in the year 2015 the plan will control salinity levels so that, with long-term mean water supply conditions, salinity levels will be below the numeric criteria at the three stations. The salinity standards provide protection from long-term increases in economic damage to downstream users.

Because of the long lead-time required to conduct salinity studies; complete environmental and feasibility reports; implement; and achieve full salinity reduction effects at the lower Colorado River main stem stations, continued funding is necessary for the recommended plan of implementation to proceed as set forth in this Review. Non-federal funds are available to cost-share with federal appropriations, and Basin irrigators stand ready with cost-share dollars to install salinity reducing measures.

## Table of Contents


Page

COLORADO RIVER BASIN SALINITY CONTROL FORUM MEMBERS . . . . . i

TRANSMITTAL LETTERS . . . . . iii

SUMMARY . . . . . v

TABLE OF CONTENTS . . . . . ix

CHAPTER 1 - INTRODUCTION . . . . . 1-1
- Purpose of Report . . . . . 1-1
- History and Background . . . . . 1-2
- Program Funding . . . . . 1-5

CHAPTER 2 - SALINITY OF THE RIVER . . . . . 2-1
- Overview . . . . . 2-1
- Observed Salinity . . . . . 2-4
- Water Use and Associated Impacts of Salinity . . . . . 2-6
- Projections . . . . . 2-7
  - Future Water Depletions . . . . . 2-7
  - Existing Salinity Conditions . . . . . 2-7
  - Future Salinity Projections . . . . . 2-9
  - Exceedance Evaluation . . . . . 2-11
  - Impacts of Hydrology . . . . . 2-12

CHAPTER 3 - WATER QUALITY STANDARDS FOR SALINITY . . . . . 3-1
- Overview of Standards . . . . . 3-1
- Numeric Criteria for Salinity . . . . . 3-2
  - Federal Regulation . . . . . 3-2
  - Temporary Increases . . . . . 3-3
- Plan of Implementation . . . . . 3-3
  - U.S. Bureau of Reclamation Program . . . . . 3-4
  - U.S. Department of Agriculture Program . . . . . 3-4
  - Description of the Plan of Implementation . . . . . 3-5

CHAPTER 4 - PLAN OF IMPLEMENTATION - FEDERAL PROGRAMS . . . . . 4-1
- Introduction . . . . . 4-1
  - Reclamation/USDA Units Included in the Plan . . . . . 4-1
    - Units Completed . . . . . 4-1
    - Units Being Implemented . . . . . 4-1
      - Paradox Valley . . . . . 4-1
      - Grand Valley . . . . . 4-3
      - Uinta Basin . . . . . 4-3

Lower Gunnison Basin . . . . . 4-4
Big Sandy River . . . . . 4-5
Dolores Project/McElmo Creek . . . . . 4-5
Units Under the New Plan . . . . . 4-6
San Juan Hammond . . . . . 4-6
Price-San Rafael Rivers . . . . . 4-6
Bureau of Land Management . . . . . 4-6
Well Plugging Activities . . . . . 4-7
Nonpoint Source Salinity Control Activities . . . . . 4-8
U.S. Fish and Wildlife Service (FWS) . . . . . 4-11
U.S. Geological Survey . . . . . 4-12
Environmental Protection Agency . . . . . 4-13

CHAPTER 5 - PLAN OF IMPLEMENTATION - STATE PROGRAMS . . . . . 5-1
Overview . . . . . 5-1
Arizona . . . . . 5-1
NPDES Permits . . . . . 5-1
Water Quality Management Planning . . . . . 5-2
Other Activities . . . . . 5-2
California . . . . . 5-2
NPDES Permits . . . . . 5-2
Water Quality Management Planning . . . . . 5-3
Other Activities . . . . . 5-3
Colorado . . . . . 5-3
NPDES Permits . . . . . 5-3
Water Quality Management Planning . . . . . 5-4
Nonpoint Source Program . . . . . 5-4
Other Activities . . . . . 5-5
Nevada . . . . . 5-6
NPDES Permits . . . . . 5-6
Water Quality Management Planning . . . . . 5-7
Facilities Plans . . . . . 5-8
Other Activities . . . . . 5-8
New Mexico . . . . . 5-9
NPDES Permits . . . . . 5-9
Water Quality Management Planning . . . . . 5-9
Other Activities . . . . . 5-10
Utah . . . . . 5-11
NPDES Permits . . . . . 5-11
Water Quality Management Planning . . . . . 5-11
Other Activities . . . . . 5-11
Wyoming . . . . . 5-12
NPDES Permits . . . . . 5-12
Water Quality Management Planning . . . . . 5-12
Education and Public Involvement . . . . . 5-13
Forum Activities . . . . . 5-14

CHAPTER 6 - MEANS OF MAKING PLAN OPERATIONAL . . . . . 6-1
Introduction . . . . . 6-1
Program Development and Implementation . . . . . 6-1
USBR Program . . . . . 6-1
USDA Program . . . . . 6-2
BLM Program . . . . . 6-2
USGS Program . . . . . 6-3
Financing Salinity Control Activities . . . . . 6-3
Responsibility for Accomplishing Salinity Control Measures . . . . . 6-5
Standards Review Procedures . . . . . 6-5

CHAPTER 7 - PROVISION FOR REVIEWING AND REVISING STANDARDS . . . 7-1

## TABLES


| No. | | Page |
|---|---|---|
| • | Salinity Control Plan of Implementation by 2015 | vii |
| 1-1 | Summary of Program Funding | 1-5 |
| 2-1 | Observed Flow-weighted Average Salinity at the Numeric Criteria Stations | 2-5 |
| 2-2 | Summary of Projected Water Depletions in the Colorado River Basin | 2-7 |
| 2-3 | Comparison of Salinity Levels to the Numeric Criteria for the Existing (1995) Level of Water Development and Salinity Control | 2-8 |
| 2-4 | Salinity Control Requirements and Needs | 2-10 |
| 3-1 | Colorado River Basin Salinity Control Program Plan of Implementation | 3-6 |
| 4-1 | Summary of Federal Salinity Control Programs | 4-2 |
| 6-1 | Summary of Colorado River Basin Salinity Control Program Funding for the Bureau of Reclamation, the Department of Agriculture and the Bureau of Land Management By Federal Fiscal Year Since 1988 | 6-4 |


## FIGURES


| | | |
|---|---|---|
| • | Map of Colorado River Basin | ii |
| 2-1 | Map of Colorado River Quality of Water Monitoring Stations | 2-3 |
| 2-2 | Salinity vs Flow at Imperial Dam | 2-4 |
| 2-3 | Damages vs Salinity at Imperial Dam | 2-6 |
| 2-4 | Historic Flow - Adjusted Salinity at Hoover | 2-9 |
| 2-5 | Historic Flow - Adjusted Salinity at Parker | 2-9 |
| 2-6 | Historic Flow - Adjusted Salinity at Imperial | 2-9 |
| 2-7 | Predicted Flow - Adjusted Salinity below Hoover Dam | 2-11 |
| 2-8 | Predicted Flow - Adjusted Salinity below Parker Dam | 2-11 |
| 2-9 | Predicted Flow - Adjusted Salinity at Imperial Dam | 2-11 |


## APPENDICES


| | | |
|---|---|---|
| A. | EPA Regulation 40 CFR, Part 120 | A-1 |
| B. | Forum Policies | B-1 |
| C. | Exceedance Evaluation Analyses | C-1 |
| D. | NPDES Permits | D-1 |
| E. | S. 523, Public Law 104-20, and Selected Portions of Public Law 104-127 | E-1 |

# CHAPTER 1 - INTRODUCTION

## Purpose of Report

This report, the 1996 Review, Water Quality Standards for Salinity, Colorado River System (Review) is prepared and submitted in response to Section 303(c) of the Clean Water Act of 1977 (Public Law [P.L.] 92-500 as amended by P.L. 95-217 and P.L. 100-4) referred to in this report as the Clean Water Act. This report is the seventh Review prepared by the Forum. Section 303(c)(1) of the Clean Water Act requires that:

> *The governor of a state or the state water pollution control agency of such state shall from time to time (but at least once each three-year period beginning with the date of enactment of the Federal Water Pollution Control Act Amendments of 1972) hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Results of such review shall be made available to the Administrator.*

This Review is written as a complete document, but focuses on information only for the 1993-1996 period. Background information regarding historical actions relative to the development and adoption of salinity standards is contained in the June 1975 standards report[1]. The 1978, 1981, 1984, 1987, 1990, and 1993 Reviews contain information pertaining to the 1975-1978 period, 1978-1981 period, 1981-1984 period, 1984-1987 period, 1987-1990 period, and 1990-1993 period respectively.

Prepared by the seven-state Colorado River Basin Salinity Control Forum (Forum) this document is a review of the water quality standards including the numeric criteria and plan of implementation previously developed and adopted by the Forum. It includes modifications to previous reviews that have become necessary as a result of changed conditions and the availability of additional information.

Nothing in this report shall be construed to alter, amend, repeal, interpret, modify, or be in conflict with the provisions of the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774), the Colorado River Basin Project Act (82 Stat. 885), the Colorado River Compact, the Colorado River Storage Project Act (70 Stat. 105), the Upper Colorado River Basin Compact, or the Treaty with the United Mexican States (Treaty Series 994).

---

[1] Water Quality Standards for Salinity, Including Numeric Criteria and Plan of Implementation for Salinity Control, Colorado River System, Colorado River Basin Salinity Control Forum, June 1975.

## History and Background

In the 1960's and early 1970's, the seven Colorado River Basin states[2] and representatives of the Federal Government discussed the problem of salinity levels increasing in the lower reaches of the Colorado River. In 1972, the Federal Government enacted the Clean Water Act which mandated efforts to maintain water quality standards in the United States. At the same time, Mexico and the United States were discussing the increasing salinity of Colorado River water being delivered to Mexico. In 1974, the Basin states established the Colorado River Basin Salinity Control Forum. The Forum is composed of representatives from each of the seven Basin states appointed by the governors of the respective states for the purpose of interstate cooperation and to provide the states with the information necessary to comply with the Environmental Protection Agency's (EPA) regulation, 40 CFR, Part 120, entitled Water Quality Standards, Colorado River System: Salinity Control Policy and Standards Procedures and Section 303(a) and (b) of the Clean Water Act. This regulation was promulgated in 1974. A copy of the regulation is included in Appendix A.

This Review, consistent with the EPA-approved 1975 standards and the 1978, 1981, 1984, 1987, 1990, and 1993 Reviews, deals only with the portion of the Colorado River Basin above Imperial Dam. As used in this Review, the lower main stem of the Colorado River System is defined as that portion of the mainstream Colorado River from Hoover Dam to Imperial Dam. Below Imperial Dam, salinity is controlled as a federal responsibility to meet the terms of the agreement with Mexico contained within Minute No. 242 of the International Boundary and Water Commission (IBWC), entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River." Minute No. 242 requires that measures be taken to assure that Colorado River water delivered to Mexico upstream from Morelos Dam will have an average annual salinity concentration no more than 115 $\pm$ 30 parts per million (ppm) total dissolved solids (TDS) higher than the average annual salinity concentration of Colorado River water arriving at Imperial Dam.

With the Forum's support, Congress enacted the Colorado River Basin Salinity Control Act (P.L. 93-320) in 1974. Title I of that Act addresses the United States' commitment to Mexico. Title I of the Colorado River Basin Salinity Control Act provided the means for the United States to comply with the provisions of Minute No. 242.

Title II of the Act created a water quality program for salinity control in the United States. Primary responsibility for the federal program was given to the Secretary of the Interior, with the Bureau of Reclamation (Reclamation) being instructed to investigate and build several salinity control units. The Secretary of Agriculture was instructed to support the effort within existing authorities (see Chapter 4 for more detail regarding these authorities).

---

[2]The seven Colorado River Basin states (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming) hereinafter referred to as the "Basin states."

In 1984, the Colorado River Basin Salinity Control Act was amended by P.L. 98-569 to authorize two additional units for construction by Reclamation. The amendments directed the Secretary of the Interior and the Secretary of Agriculture to give preference to the salinity control units with the least cost per unit of salinity reduction. The Act was also amended to establish a voluntary on-farm salinity control program to be implemented by the Department of Agriculture and provided for voluntary replacement of incidental fish and wildlife values foregone on account of the on-farm measures. Many cost-effective salt-load reducing activities have been accomplished in the decade following that authorization. P.L. 98-569 also authorized the Bureau of Land Management (BLM) to implement salinity controls.

In 1994, Reclamation concluded that the existing Act, as amended, with its unit-specific approach and authorization ceiling, was limiting salinity control opportunities. In 1995, the Salinity Control Act was amended by P.L. 104-20 to authorize Reclamation to develop and implement a basin-wide approach to salinity control. An additional $75 million of expenditures by Reclamation were authorized by P.L. 104-20.

In April 1996, the Federal Agriculture Improvement and Reform Act (FAIRA) of 1996 (P.L. 104-127) further amended the U.S. Department of Agriculture's (USDA) role in salinity control by creating a new conservation program known as the Environmental Quality Incentives Program (EQIP) which combines four existing USDA conservation programs including the Colorado River Salinity Control Program. FAIRA, for the most part, terminated previous authorities and provided for mandatory funding in the amount of $200 million per year through 2002. USDA must promptly create rules and regulations concerning how EQIP funds can be spent. The past authority for the states to cost-share from the Basin funds is retained in the new EQIP program with linkage to the Bureau of Reclamation's authorities to distribute Basin funds for cost-sharing. The new language added to the Salinity Control Act by FAIRA is as follows:

*SECTION 355. CONFORMING AMENDMENTS*

*SECTION 355(c) Colorado River Basin Salinity Control Program*

*The Colorado River Basin Salinity Control Act (43 U.S.C. §1592) is amended*

*(1) in section 202 by striking subsection (c) and inserting "(c) The Secretary of Agriculture is directed to implement salinity control measures in the Colorado River Basin as an element of the Environmental Quality Incentives Program authorized by the "Agricultural Reform and Improvement Act of 1996."*

*(2) in section 205 by striking "pursuant to section 202(c)(2)(c)" in subsection (a) and by adding at the end the following new subsection "9(f) The Secretary may expend funds available in the basin funds to cost share salinity measures consistent with the cost allocations in section 205."*

It is premature for the Basin states to anticipate how the salinity control program will be administered under EQIP, whether funds will be allocated to the salinity control program in sufficient quantity to provide for the required salt removal, and how the program might be administered for environmental compliance, particularly as it relates to the National Environmental Policy Act (NEPA) and environmental mitigation activities.

The 1975 standards report includes a detailed discussion of the legislation and events leading to the establishment of basin-wide salinity standards with numeric criteria for the lower main stem of the Colorado River. The standards were adopted by all of the Basin states and subsequently approved by the EPA. The 1978, 1981, 1984, 1987, 1990, and 1993 reports reviewed the numeric criteria included in the 1975 report and concluded that no change was warranted. However, the plan of implementation in each report was updated to reflect changes in the salinity control program since 1975.

The plan of implementation, as set forth in this and earlier Forum Reviews, includes effluent limitations on industrial point source discharges with the objective of no-salt return whenever practicable. In 1977, the Forum adopted its "Policy for Implementation of Colorado River Salinity Standards Through the National Pollution Discharge Elimination System (NPDES) Permit Program." This policy provides guidance for the regulation of municipal and industrial point source discharges of saline water. In 1980, the Forum adopted a policy to encourage the use of brackish and/or saline waters for industrial purposes where it is environmentally sound and economically feasible. A third policy dealing with intercepted ground water was adopted by the Forum in 1982. In 1988, the Forum adopted a fourth policy which addresses the salinity of water discharges from fish hatcheries. Each of the Forum policies are included in Appendix B.

## Program Funding

In Fiscal Years 1994, 1995, and 1996, the Colorado River Basin states urged Congress to provide Reclamation, the BLM, and the USDA with adequate funds to implement the authorized salinity control program. Table 1-1 is a summary of the Forum's funding recommendations and the federal appropriations for Fiscal Years 1994, 1995 and 1996.

**Table 1-1**
**Summary of Program Funding**
**(by Federal Fiscal Years)**

| AGENCY/DEPARTMENT | 1994 | | 1995 | | 1996 | |
|---|---|---|---|---|---|---|
| | Forum Recommendation | Appropriation | Forum Recommendation | Appropriation | Forum Recommendation | Appropriation |
| Bureau of Reclamation | $32,800,000 | $32,962,000 | $22,126,000 | $12,540,000 | $18,600,000 | $8,205,000 |
| Bureau of Land Management | $6,980,000 | $800,000 | $3,395,000 | $800,000 | $3,957,000 | $800,000 |
| Department of Agriculture | $18,400,000 | $13,783,000 | $15,900,000 | $4,500,000 | $15,900,000 | $2,681,000 |

The success of the federal/state cooperative Colorado River Basin salinity control program is contingent upon sufficient funding to allow the plan of implementation to proceed as scheduled. Prior to 1994, funding for the salinity control program for the USDA and USBR programs was sufficient to maintain the scheduled salinity removal goals of the implementation plan. Since that time, the USBR and USDA programs were and are in transition (described in Chapter 4) and have not received sufficient funding to meet the target goals for salinity removal set by the Forum. The fact that the numeric criteria have not been exceeded during this time is principally due to favorable hydrology. The Forum is concerned that with a return to normal hydrology, federal funding levels are insufficient to meet the current target goals set to avoid exceeding the numeric criteria in the future.

# CHAPTER 2 - SALINITY OF THE RIVER

## Overview

The Colorado River drains 246,000 square miles (approximately 157 million acres) of the western United States and a small portion of northern Mexico. Its waters serve some 4 million people within the United States' portion of the Colorado River Basin, and through export provides full or supplemental water supply to another 19 million people outside the Basin. The regional economy is based on irrigated agriculture, livestock grazing, mining, forestry, manufacturing, oil and gas production, recreation and tourism. About 3.5 million acres are irrigated within the Basin and hundreds of thousands of additional acres are irrigated by waters exported from the Basin. Hydroelectric power facilities along the Colorado River and its tributaries generate approximately 12 billion kilowatt-hours annually which is used both inside and outside of the Basin. The Colorado River also serves about 1.7 million people and 500,000 irrigated acres in Mexico.

Salinity has long been recognized as one of the major problems of the river. For this Review, the terms "salinity" and "total dissolved solids" (TDS) are used interchangeably, however TDS technically includes all of the soluble constituents potentially dissolved in the River, while salinity as defined in this Program and this Review includes only the combined concentration of the six major cations and anions (calcium, magnesium, sodium, carbonate, chloride, and sulfate) which together represent the bulk of TDS in the Colorado River. The current salinity control program is not designed to address trace minerals or any individual constituent that may be dissolved in the River, however these minerals may be removed as an incidental benefit of the Program.

The Colorado, like most western rivers, increases in salinity from its headwaters to its mouth, carrying an average salt load of 9 million tons annually past Hoover Dam, the uppermost location at which numeric criteria have been established. In addition to total salt load which measures the total mass of salt carried in the River (tons/yr), this report also examines salinity in terms of concentration as expressed in milligrams per liter (mg/L).

The salts in the Colorado River system are indigenous and pervasive. Many of the sediments of the basin were deposited in marine environments which were saline. Salts deposited with the sedimentary rocks are easily eroded, dissolved, and transported into the river system. The salinity control program is designed to prevent a portion of this abundant salt supply from moving into the river system.

In a 1971 study[3], the EPA analyzed salt loading in the basin and for convenience divided it into two categories: naturally occurring and human-caused. The EPA concluded that about half (47 percent) of the salinity concentration measured in water arriving at Hoover Dam is from

---

[3] The Mineral Quality Problem in the Colorado River Basin, Summary Report, Environmental Protection Agency, Regions VIII and IX, 65 pp., 1971.

natural causes including salt contributions from saline springs, ground water discharge into the river system (excluding irrigation return flows), erosion and dissolution of sediments, and the concentrating effects of evaporation and transpiration. The natural causes category also included salt contributions from non-point (excluding irrigated agriculture) or unidentified sources or from the vast, sparsely-populated regions of the drainage, much of which is administered by the BLM or other government agencies. Of the land within the Colorado River Basin, about 75 percent is owned and administered by the Federal Government or held in trust for Indian tribes. The greatest portion of the naturally-occurring salt load originates on these federally-owned and administered lands. Human activities, such as the following, can influence the rate of natural salt movement from rock formations and soils to the river system: livestock grazing, wildlife management, logging, mining, oil exploration, road building, recreation and urbanization.

Approximately 53 percent of the salinity concentration in the water arriving at Hoover Dam, as identified by EPA, results from a number of human activities. EPA estimated that out-of-basin exports account for about 3 percent of the salt concentration at Hoover Dam, with irrigation accounting for 37 percent, reservoir evaporation and phreatophyte use accounting for about 12 percent, and about 1 percent attributed to municipal and industrial uses. Much of the salt load contribution from irrigated agriculture is from federally-developed irrigation projects.

Salinity control activities necessarily include a water quality monitoring and analysis component that provides basin-wide information for program evaluation. The monitoring and analysis component provides an essential database for future studies, supports state and regional planning activities, and provides an objective basis for evaluating the effectiveness of salinity control measures.

Continuing evaluations of the salinity of the Colorado River are made by Reclamation, the U.S. Geological Survey (USGS) and the Bureau of Land Management (BLM). Several were published by the agencies during the period of this Review (1993-1996). To evaluate changes in salinity, water quality and streamflow data are obtained on a daily, weekly, monthly, and/or quarterly basis at various points on streams throughout the basin by the USGS in cooperation (through financial and/or direct services) with private entities, the states and other federal agencies. Gaging stations in the basin which are of significance to the programs, and for which streamflow and water quality records are available, are shown on Figure 2-1.

Average annual salinity concentrations and salt loads are determined on a flow-weighted basis using the most accurate data available. To compute the flow-weighted average annual salinity concentration, the average flow of the River in acre-feet per day at a measuring point and the average concentration of salts in the water in mg/L are determined on a daily basis. Concentration of salt may be measured directly by chemical analysis of dissolved constituents (TDS) or indirectly as specific conductance and correlated to TDS. Daily flows are multiplied by daily salinity concentrations and then summed to produce an annual mass figure. The annual mass figure is then divided by the total flow for the year at the measuring point (sum of the daily average flows) to yield the flow-weighted average annual salinity for the station.

# MONITORING STATIONS

1 Green River near Green River, WY
2 Green River near Greendale, UT
3 Yampa River near Maybell, CO
4 Duchesne River near Randlett, UT
5 Whiter River near Watson, UT
6 Green River near Green River, UT
7 San Rafael River nr Green River, UT
8 Colorado River nr Glenwood Springs
9 Colorado River near Cameo, CO
10 Gunnison River near Grand Jct, CO
11 Dolores River near Cisco, UT
12 Colorado River near Cisco, UT
13 San Juan River near Archuleta, NM
14 San Juan River near Bluff, UT
15 Colorado River at Lees Ferry, AZ
16 Colorado River near Grand Canyon
17 Virgin River at Littlefield, AZ
18 Colorado River below Hoover Dam
19 Colorado River below Parker Dam
20 Colorado River at Imperial Dam

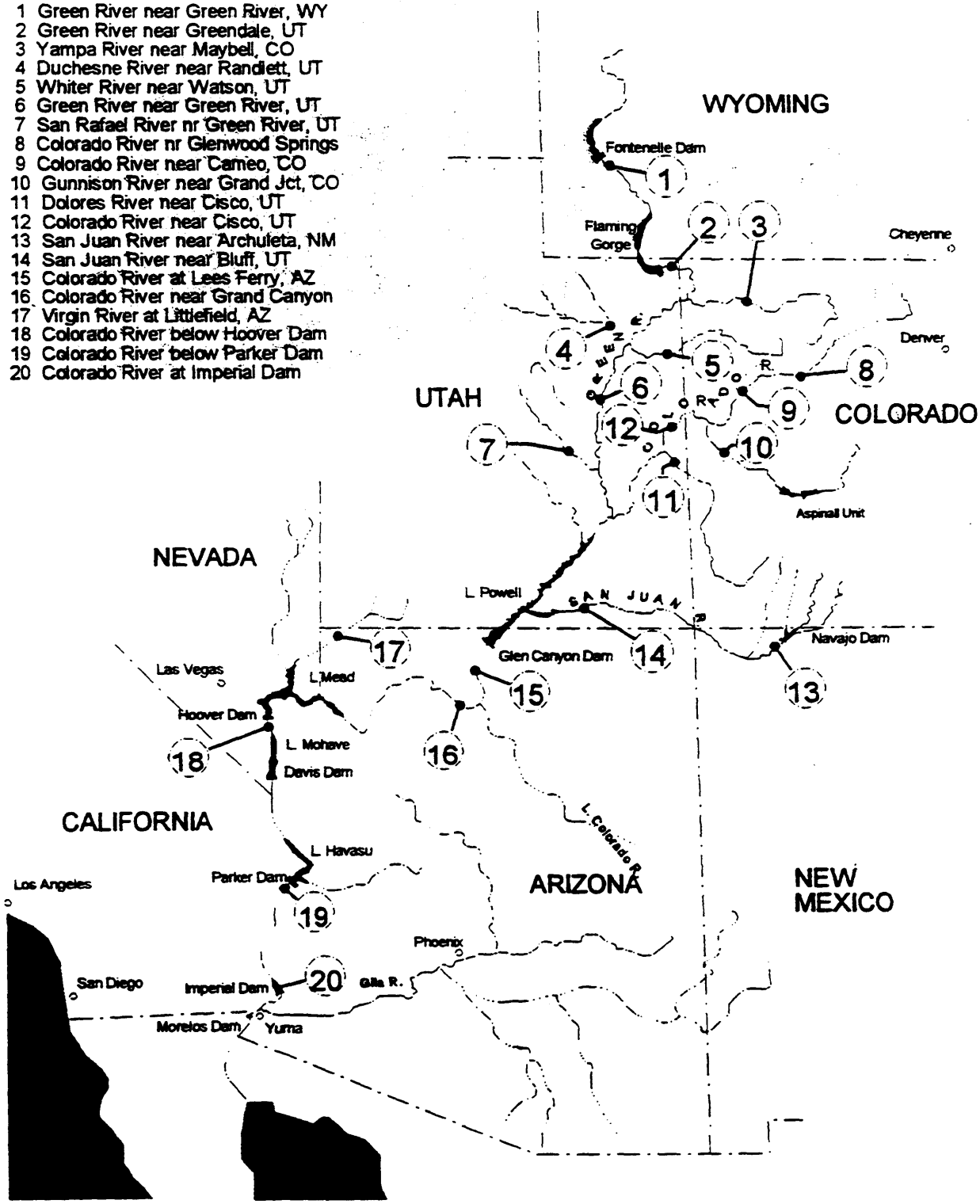



FIGURE 2-1

Data collection at these stations include streamflow, specific conductance, and periodic sampling for dissolved solids concentration. In addition to those stations shown in Figure 2-1, many other monitoring stations are maintained where data can, in part, be used to analyze the effectiveness of the salinity control program.

## Observed Salinity

Salinity of the river, and to a lesser extent salt loading, has fluctuated significantly over the period of record (1941-1994; Figure 2-2). Salinity generally decreases in periods of high flow and increases in periods of low flow as can be seen in Figure 2-2.

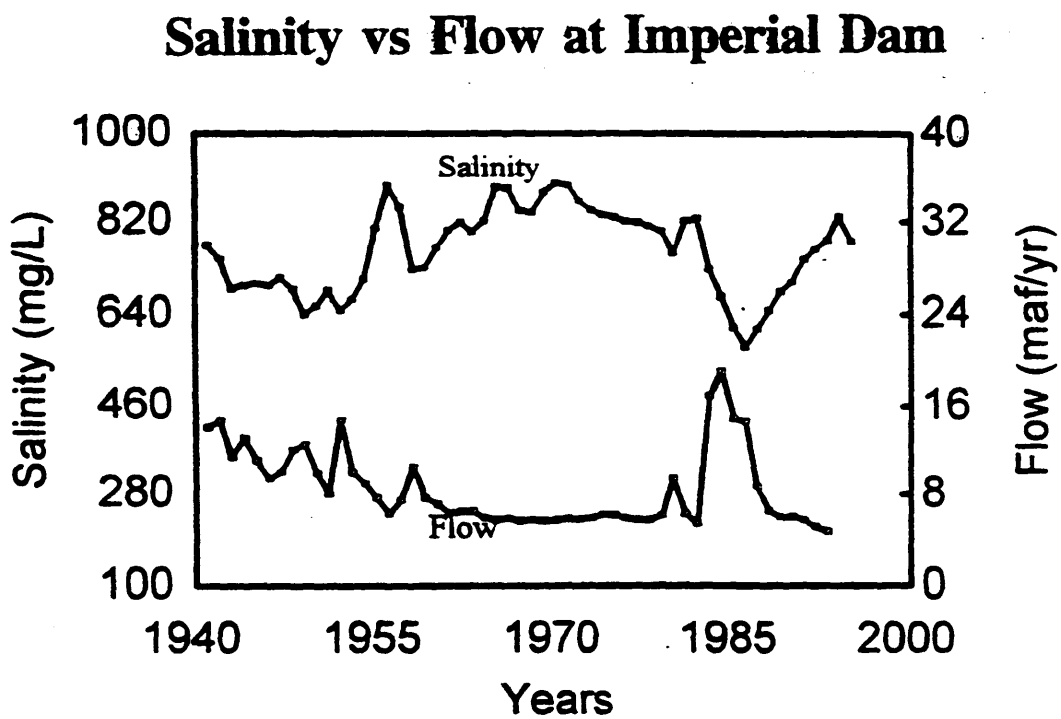



FIGURE 2-2

Record high flows during the mid-1980's resulted in a reduction in salinity in the lower main stem of approximately 250 mg/L at Imperial Dam. Conversely, the period from 1988 to 1992 was the driest five years of record historically observed. As a result, storage in the reservoirs was depleted and salinity in the River gradually increased. Table 2-1 shows the flow-weighted salinity from 1972 to 1995 below Hoover and Parker Dams, and at Imperial Dam.

Table 2-1

**Observed Flow-Weighted Average Salinity**
**at the Numeric Criteria Stations**
(Total Dissolved Solids in mg/L)[4]

| Calendar Year | Below Hoover Dam | Below Parker Dam | At Imperial Dam |
|---|---|---|---|
| 1972[5] | 723 | 747 | 879 |
| 1973 | 675 | 709 | 843 |
| 1974 | 681 | 702 | 834 |
| 1975 | 680 | 702 | 829 |
| 1976 | 674 | 690 | 822 |
| 1977 | 665 | 687 | 819 |
| 1978 | 678 | 688 | 812 |
| 1979 | 688 | 701 | 802 |
| 1980 | 691 | 711 | 760 |
| 1981 | 681 | 716 | 821 |
| 1982 | 680 | 713 | 826 |
| 1983 | 658 | 678 | 727 |
| 1984 | 597 | 611 | 675 |
| 1985 | 556 | 561 | 615 |
| 1986 | 517 | 535 | 577 |
| 1987 | 519 | 538 | 612 |
| 1988 | 529 | 540 | 648 |
| 1989 | 564 | 559 | 683 |
| 1990 | 587 | 600 | 702 |
| 1991 | 629 | 624 | 749 |
| 1992 | 658 | 651 | 767 |
| 1993[6] | 660 | 631 | 784 |
| 1994 | 663 | 685 | 831 |
| 1995 | 654 | 661 | 787 |

[4]Determined by the U.S. Geological Survey (USGS) from data collected by U.S. Bureau of Reclamation and USGS and published in *Quality of Water, Colorado River Basin, Progress Report No. 17*, 1995.

[5]Data values for 1972 became the Numeric Criteria.

[6]Data based upon provisional records.

## Water Use and Associated Impacts of Salinity

The Colorado River, from its headwaters in the Rocky Mountains to its mouth in the Gulf of California, is utilized for a variety of purposes. A portion of the flow is transported out of the Colorado River Basin for use in adjacent river basins. In the Colorado River Basin, irrigation, municipal and industrial, hydroelectric power generation, power plant cooling, fish and wildlife, and recreation are the major uses of the water.

Colorado River water users in the Lower Basin have suffered significant economic impacts due to long-term continued use of water with elevated salinity levels. Figure 2-3 indicates salinity damages resulting from long-term continued use at various levels of salinity. At current salinity levels, these damages are estimated to be in excess of $750 million per year. If the proposed plan of implementation for salinity control as set forth in this Review is not implemented, these damages could exceed $1 billion per year by the year 2015.

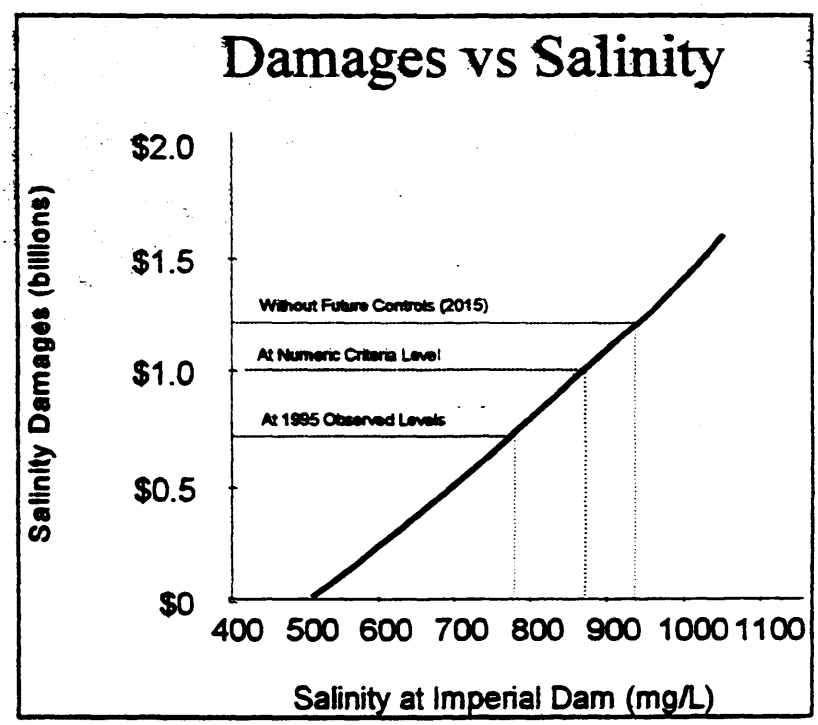



FIGURE 2-3

Agricultural water users suffer economic damage as a result of using highly saline waters through reduced crop yields, added labor costs for irrigation management, and added drainage requirements. The urban user incurs additional costs due to more frequent replacement of plumbing and water using appliances, use of water softeners and the purchase of bottled water. Industrial users and water treatment and waste water utilities incur reductions in the useful life of system facilities and equipment from higher levels of salinity.

A significant impact in the Lower Basin is due to the regulatory restrictions imposed by local and regional water quality standards and management programs to protect ground water supplies. Regulatory agencies have placed restrictions on reuse or recharge of waters that exceed specified salinity levels. If the salinity levels of the Colorado River continue to increase, these regulatory actions would result in additional expensive treatment of water prior to reuse or disposal of such waters. If disposal options are selected, additional costly alternative sources of water must be developed or imported to meet the demands previously met or that could be met by water reuse.

It should be noted that although significant damages occur due to existing Colorado River salinity levels which are below the numeric criteria, this level of damages is viewed as reasonable, and can be tolerated by users in the lower Basin.

## Projections

### Future Water Depletions

One of the significant factors affecting salinity concentrations is water use. Estimates of projected water use through the year 2015 for each of the seven states were developed jointly by the states and Reclamation. Table 2-2 presents a summary of estimated water depletions in the Upper Colorado River Basin, and from the main stem of the Lower Colorado River.

**Table 2-2**
**Summary of Projected Water Depletions in the Colorado River Basin**[7]
(1,000 acre-feet)

| | 1995 | 2000 | 2005 | 2010 | 2015 |
|---|---|---|---|---|---|
| Upper Basin[8] | 3,650 | 3,935 | 4,103 | 4,270 | 4,380 |
| Lower Basin[9] | 7,215 | 7,500 | 7,500 | 7,500 | 7,500 |
| Total | 10,865 | 11,435 | 11,603 | 11,770 | 11,880 |

### Existing Salinity Conditions

The goal of the Colorado River salinity control program is to maintain the flow-weighted average annual salinity at or below the numeric criteria. The effort is not, however, intended to counteract the salinity fluctuations that are a result of the highly variable flows caused by short-term climatic variations in temperature, precipitation, and snowmelt. Therefore, to evaluate the effectiveness of the salinity control program, salinity data were analyzed and adjusted by removing the effects of these variations to better understand program effectiveness under long-term mean water conditions.

---

[7]Source: Depletion projections prepared by Basin States for CRSS salinity runs (Oct. 1995).

[8]Depletions at point of use. Data do not include Colorado River Storage Project reservoir evaporation estimated by Reclamation to average 520,000 acre-feet per year under full development.

[9]Lower Colorado River main stem only. Diversions from the main stem less returns. Data do not include main stem reservoir evaporation and stream losses.

For this Review, Reclamation utilized this adjusted data to evaluate whether current salinity control efforts are sufficient to meet the numeric criteria of the salinity standards under the current level of water development in the basin. Table 2-3 compares the numeric criteria with the observed data and adjusted salinity levels at the three Lower Basin monitoring stations. The adjusted values are higher than the observed salinities because they represent the full impact of existing water development when in fact the full impact of existing development have not yet made their way through the hydrologic system.

**Table 2-3**
**Comparison of Salinity Levels to the Numeric Criteria for the Existing (1995) Level of Water Development and Salinity Control**

| Station | Numeric Criteria (mg/L) | Adjusted Salinity[10] (mg/L) | Observed Salinity[11] (mg/L) |
|---|---|---|---|
| Colorado River below Hoover Dam | 723 | 756 | 654 |
| Colorado River below Parker Dam | 747 | 775 | 661 |
| Colorado River at Imperial Dam | 879 | 882 | 787 |

[10]Reflects salinity that would occur from long-term mean water supply as computed by CRSS.

[11]Data based on provisional records.

Figures 2-4, 2-5 and 2-6 summarize data from past Reclamation progress reports,[12] comparing the adjusted salinity (to reflect long-term mean water supply) to the numeric criteria at the three water quality stations through time. Adjusted salinity values were not reported during the 1980 through 1990 period. The figures show that at times in the past adjusted salinity values were above the numeric criteria.

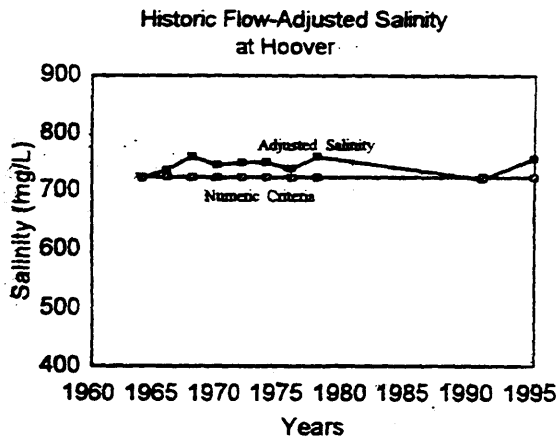



FIGURE 2-4

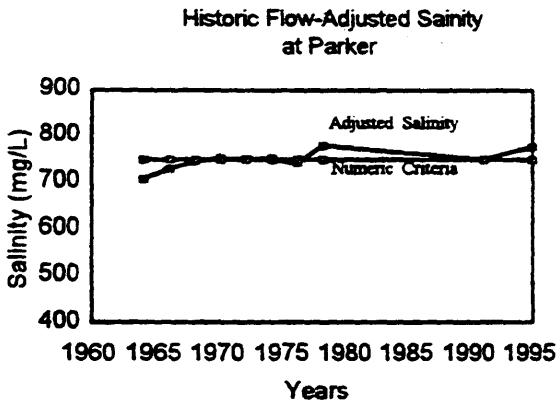



FIGURE 2-5

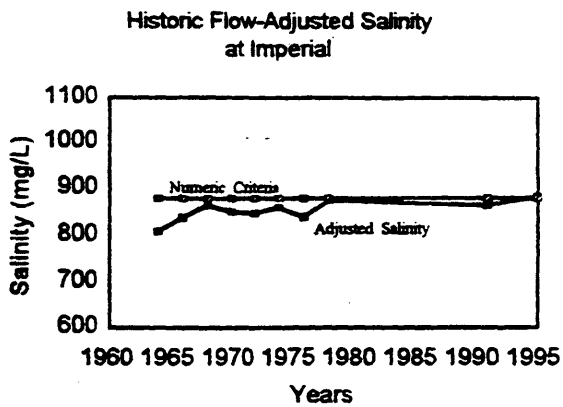



FIGURE 2-6

## Future Salinity Projections

Salt-routing studies were conducted for the Review using the Colorado River Simulation System (CRSS) developed by Reclamation.[13] The CRSS is a package of computer models and databases developed by Reclamation as a tool for use by water resource managers dealing with water-related issues and problems in the Colorado River Basin. The central feature of the CRSS is a computer program which simulates the flow of water and salt through the system and the operation of the major reservoirs including hydroelectric power plants.

---

[12]Quality of Water, Colorado River Basin, Progress Report, No. 1 through 17.

[13]Detailed information on CRSS is presented in the following Reclamation reports: Colorado River Simulation System, An Executive Summary (October 1981); Colorado River Simulation System, Users Manual (June 1982); and Colorado River Simulation System, System Overview (1984).

Studies were conducted to provide estimates of future flow-weighted average annual salinity concentrations for each year of the study period at Hoover, Parker and Imperial Dams in the Lower Basin.

CRSS was first used to determine what the existing salinity levels would have been if hydrologic conditions had been "normal" (had approximated the average annual long-term water supply). Based on this analysis, the program has a computed shortfall of 418,200 tons of salinity control. This amount of additional salinity control is needed to offset the existing (1995) level of water development beyond the 621,400 tons of existing salinity control.

CRSS was then used to predict salinity levels under normal hydrologic conditions at 3 levels of salinity control: (1) without any control, (2) without any additional future control, and (3) with enough future control to return to the numeric criteria by the year 2015. In order to meet the numeric criteria in 2015 at the Hoover station, the salinity program will need a total of 1,476,600 tons of salinity control as is shown in Table 2-4. This represents 855,200 tons beyond the existing 621,400 tons of salinity control. In other words, approximately 45,000 tons of new salinity control measures must be added each year if the program is to meet the numeric criteria at the year 2015.

**Table 2-4**
**Salinity Control Requirements and Needs**

| | |
|---|---|
| Existing Salinity Control Needs (1/95) | 1,039,600 tons |
| Measures in Place | 621,400 tons |
| Backlog (shortfall) in Existing Controls | 418,200 tons |
| 2015 Salinity Control Needs (total) | 1,476,600 tons |
| 1996-2015 Additional Salinity Control Needs | 437,000 tons |
| 1996-2015 Implementation Plan | 855,200 tons |

Using the 78 years of historic hydrology in the CRSS data-base, Reclamation determined the mean salinity levels through the year 2015. The actual annual values will vary significantly from these averages. The results may be thought of as a trend analysis with the random, hydrologic variation removed. The results of this analysis are presented in Figures 2-6 through 2-8. For each of the three stations, the figures show, relative to the numeric criteria: (1) where mean salinity levels would have been without any controls (past, existing, or future); (2) where they would be with existing and no additional controls; and, (3) where they would be with both existing and future salinity controls.

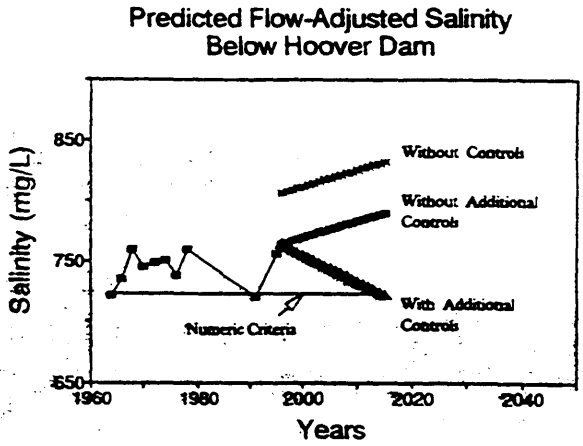



FIGURE 2-7

Future salinity concentrations will depend not only upon human activities but upon natural

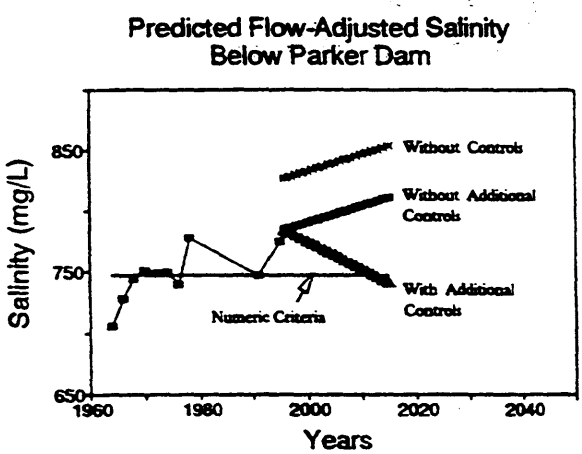



FIGURE 2-8

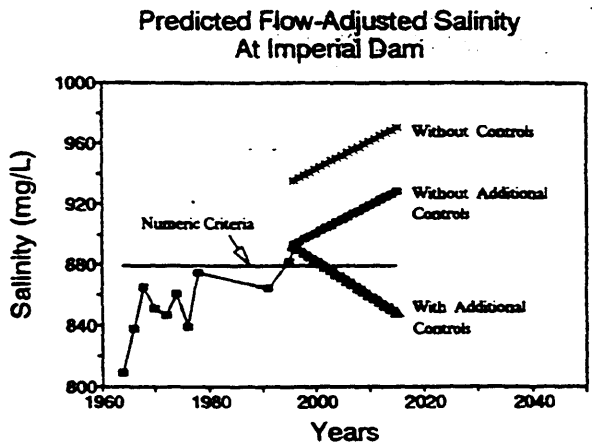



FIGURE 2-9

phenomena, such as runoff conditions, natural evapotranspiration, and precipitation, dissolution and mixing within the major storage reservoirs. Even with full implementation of the Program's current Plan of Implementation that would offset the human impacts since 1972, the actual salinities at the criteria stations (and elsewhere in the Basin) will continue to fluctuate with hydrologic conditions in the future.

## Exceedance Evaluation

A statistical analysis was performed for this Review in order to determine the effectiveness of the program in maintaining the numeric criteria. The analysis evaluated four conditions of various levels of salinity control ranging from no controls to implementing the Plan. Data were developed which indicate the frequency of occurrence of various mean annual salinity concentrations. Provided the salinity control measures in the Plan of Implementation are in place

by 2015, the mean annual salinity concentrations at the three lower main stem stations would be at or below the numeric criteria, with Hoover Dam being the controlling station. This statistical analysis is included as Appendix C.

## Impacts of Hydrology

Beyond the exceedance percentages shown in Appendix C, which show how often various salinity levels should be attained, it is important to understand that annual salinity levels may remain depressed or elevated for a period of time. The historical plot of salinity at Imperial Dam shown in Figure 2-2 earlier in this Review effectively demonstrates this.

Also, Reclamation's CRSS model was used to define how quickly salinity may increase or decrease from the present levels recently observed in the Colorado River system. The model runs were made by setting the starting conditions to the observed level of salinity and storage in the reservoir system. The highest and lowest periods of record were selected out of the CRSS database to define these bounds. The model runs were started with these critical periods and allowed to continue through the database for 20 years as an example of how salinity may vary (see Appendix C).

# CHAPTER 3 - WATER QUALITY STANDARDS FOR SALINITY

## Overview of Standards

On December 18, 1974, the EPA promulgated a regulation (40 CFR 120; see Appendix A) which set forth a basin-wide salinity control policy for the Colorado River Basin. This regulation also established a standards procedure, and required the Colorado River Basin states to adopt and submit to the EPA water quality standards for salinity, including numeric criteria and a plan of implementation, consistent with the policy stated in the regulation. The Basin states, acting through the Forum, initially responded to this regulation by developing and submitting to the EPA a report entitled Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control - Colorado River System dated June 1975. Since the states' initial adoption, the water quality standards have been reviewed every three years (1978, 1981, 1984, 1987, 1990, and 1993) as required by Section 303(c)(1) of the Clean Water Act. This report documents the seventh triennial review conducted by the Forum as required by law.

In 1975, the Forum proposed, the states adopted, and the EPA approved, water quality standards, including numeric criteria and a plan of implementation to control salinity increases. The Forum selected three lower Colorado River mainstem stations as being appropriate points in the Colorado River system at which numeric criteria should be established as required by the 1974 regulation. These stations are located at the following points on the Colorado River: (1) below Hoover Dam; (2) below Parker Dam; and (3) at Imperial Dam. The plan of implementation, developed in 1975 by the Forum and participating federal agencies, was designed to ensure compliance with the water quality standards for salinity. During each triennial review, the plan of implementation has been updated to ensure continuing compliance with the standards.

The standards require that a plan be developed that will maintain the flow-weighted average annual salinity at or below the 1972 levels while the Basin states continue to develop their compact-apportioned water supply. The plan of implementation was not established to reduce the salinity of the river below levels that were caused by natural variations in river flows or human activities prior to 1972, but to offset the effects of water resource development in the Colorado River Basin after 1972.

The Colorado River water quality standards for salinity and the approach taken by the Basin states in complying are unique. During the course of each triennial review, the Forum projects the Basin states' use of compact-apportioned waters and the resulting changes in salinity. The salinity projections are based on the use of the long-term mean water supply of 15 million acre-feet per year. The plan of implementation is revised as necessary to ensure that the numeric criteria will be maintained.

The regulation specifically stated that salinity control was to be *implemented while* the Basin states continue to develop their compact-apportioned water. Historically, the Forum designed the plan of implementation to maintain the numeric criteria for a period of 15-20 years

(e.g., the 1990 Review contained a plan of implementation through the year 2010). In this triennial review, the Forum not only looked at the amount of salt that needs to be removed by the year 2015, but also determined the salt removal necessary when there is full development of the compact-apportioned waters of the Colorado River. In order to comply with the numeric criteria, the Forum has determined that at full development of the compact-apportioned waters, 1.8 million tons of salt annually must be removed or prevented from entering the system. The plan of implementation (described in Chapters 4 and 5) includes projects that have the potential for meeting the goal of removing the required salt tonnage.

## Numeric Criteria for Salinity

### Federal Regulation

The federal regulation promulgated (see Appendix A) by the EPA required the adoption of numeric criteria by the states. The observed flow-weighted average annual salinity for the year 1972 was determined by Reclamation from daily flow and salinity data collected by the U.S. Geological Survey and Reclamation and became the numeric criteria as follows:

| | |
|---|---|
| Below Hoover Dam | 723 mg/L |
| Below Parker Dam | 747 mg/L |
| At Imperial Dam | 879 mg/L |

There is no inference that 1972 was chosen as the basis for establishing the numeric criteria because that year represented a typical or average year. Further, the plan of implementation is designed to offset the effects of human activity under long-term mean water supply conditions of 15 million acre-feet per year. The Forum's basis for selecting these stations is because of their proximity to key diversion facilities on the lower Colorado River. The State of Nevada diverts Colorado River mainstem water from Lake Mead for use in the Las Vegas area, and its return flows move into the Lake and are part of the water supply available below Hoover Dam. The Metropolitan Water District of Southern California and the Central Arizona Project divert water from Lake Havasu, impounded behind Parker Dam, for many millions of water users in southern California and central Arizona. The large agricultural areas in the Imperial and Coachella Valleys in California and the Yuma area in Arizona and California are served by diversions made at the Imperial Dam. All lower basin water users suffer adverse impacts of high salinity to some degree.

The criteria were not established to protect human health or fish and wildlife values. The salinity levels that are anticipated in the future, even without salinity control efforts, have not been shown to have adverse effects on human health or wildlife. Thus, this program is different than most other water quality standards compliance programs.

The Forum, responding to the requirements of Section 303© of the Clean Water Act, has conducted the review contained in this report. The Forum concludes that the numeric criteria need not be revised and should continue to be the values used for the standards.

## Temporary Increases

The plan of implementation as set forth in this Review is designed to remove or control enough salt from the River system to maintain salinity levels at or below the 1972 levels as far as it may be determined that development and/or human activity have impacted the salinity levels. The program is not, however, intended to offset the salinity fluctuations that are a result of the River's highly variable annual flows (natural variations in the hydrologic cycle). The plan of implementation for this Review is based on the use of the long-term mean water supply, as were the 1975 Report and all subsequent Reviews.

It should be recognized that the River system is subject to highly variable annual flow. The frequency, duration, and availability of carryover storage greatly affect the salinity of the lower mainstem, therefore it is probable that salinity levels will exceed the numeric criteria in some years and be well below the criteria in others. Given the above assumptions, the flow-weighted average annual salinity will be maintained at all times at or below 1972 levels.

Periodic increases in salinity above the criteria as a result of reservoir conditions or periods of below long-term average annual river flow will also be in compliance with the standards. With satisfactory reservoir conditions, and when river flows return to at or above the long-term average annual flow, concentrations are expected to be at or below the numeric criteria.

Recent analyses have shown that the impact of natural variations in the hydrologic cycle can have a significant impact on salinity. These natural variations in runoff can cause a fluctuation in average annual salinity concentrations of about 450 mg/L TDS at Imperial Dam.

The federal regulations provide for temporary increases above the 1972 levels if control measures are included in the plan. Should additional water development projects beyond those anticipated to occur be completed before control measures are identified or brought on line, temporary increases above the numeric criteria could result. However, these increases will be deemed to conform with the standards if appropriate salinity control measures are included in the plan.

## Plan of Implementation

The Forum believes it should assess whether implementation of the salinity control program maintains salinity at some interim point in time at or below the numeric criteria as provided for in the standards. For this report, the Forum has decided to look ahead about 20 years to the year 2015. The Plan of Implementation has been designed to maintain the salinities of the Colorado River at or below the numeric criteria below Hoover Dam. As described in Chapter 2, the plan of implementation must remove 1,476,600 tons of salt to meet this goal. This will principally be accomplished by reducing the salt contributions to the River from existing sources and minimizing future increases in salt load caused by human activities.

Several significant legislative and organizational changes concerning the Salinity Control Program have occurred since the adoption of the 1993 Triennial Review by the Colorado River Basin Salinity Control Forum. Because these changes have affected both Reclamation and USDA's salinity control programs, they have affected the development of the plan of implementation as presented in this Review. These changes are highlighted below, followed by a discussion of the current plan of implementation.

## U.S. Bureau of Reclamation Program

On July 28, 1995, Public Law (P.L.) 104-20 was signed into law. P.L. 104-20 increased the appropriations authorization ceiling for the Colorado River Basin Salinity Control Program by an additional $75,000,000 and authorized the Secretary of the Department of the Interior, acting through Reclamation, to implement a basin-wide salinity control program. The Secretary may carry out the program directly or make grants, enter into contracts, memoranda of agreement, commitments for grants, or advances of funds to non-federal entities under such terms and conditions as the Secretary may require. The program is to consist of cost-effective measures and associated works to reduce salinity from saline springs, leaking wells, irrigation sources, industrial sources, erosion of public and private land, or other sources that the Secretary considers appropriate. This program provides for the mitigation of incidental fish and wildlife values that are lost as a result of these measures.

Section 202(a)(6) of the Act, as amended, allows the Secretary to initiate additional salinity control projects without the need for specific congressional authorization. The Secretary's authorities in this regard are now similar to those provided to the Secretary of Agriculture by the 1984 amendments. The Forum believes that this important change will allow a more timely and efficient procedure for Reclamation to identify cost-effective units, or portions thereof, and to proceed with their construction. Reclamation has developed and adopted implementing guidelines and procedures for the new program.

## U.S. Department of Agriculture Program

On December 1, 1994, the Department of Agriculture (USDA) was reorganized. Under the new organization, the Natural Resources Conservation Service (formerly the Soil Conservation Service) was given responsibility for all aspects of the USDA's Colorado River Salinity Control Program; prior to the reorganization, the Agricultural Stabilization and Conservation Service (now Consolidated Farm Services Administration) was responsible for the budget and funding, participant selection criteria and contract administration functions.

On April 4, 1996, the President signed into law the Federal Agricultural Improvement and Reform Act (P.L. 104-127). It established a new program, the Environmental Quality Incentives Program (EQIP), which combined the Agricultural Conservation Program, Colorado River Basin Salinity Control Program, the predecessor Water Quality Incentives Program, and the Great Plains Conservation Program into one program intended to assist crop and livestock producers deal with environmental and conservation improvements on the farm. EQIP will be phased-in over a 6-

month period (April 4 - October 1, 1996). During the phase-in period, "Interim EQIP" will continue to use the functions of the Colorado River Salinity Control Program to write new contracts. Interim EQIP terminates October 1, 1996. During this phase-in period, the Secretary of Agriculture is directed to develop and issue final regulations for carrying out EQIP.

Under EQIP, the Secretary of Agriculture is authorized to enter into contracts of not less than 5 years nor more than 10 years in duration. The Secretary of Agriculture is directed to develop and use a competitive offer/priority setting process in order to maximize the environmental benefits achieved per dollar expended. While the EQIP provides that the federal share of cost-share payments to a producer shall not be more than 75 percent of the projected cost of the practices being installed (the present cost-share is 70 percent under the CRSC program), the total amount of cost-share and incentive payments to a producer may not exceed $10,000 for any fiscal year and $50,000 for any multi-year contract. The Secretary of Agriculture may exceed the annual amount limitation based on his case-by-case assessment of need and whether doing so is consistent with the per dollar maximization of environmental benefits.

## Description of the Plan of Implementation

For the 1996 Triennial Review the plan of implementation consists of the following:

1. Completion of Reclamation, BLM and USDA salinity control measures to the extent that each unit remains viable and appropriately cost effective.

2. Implementation of the Forum's recommended and adopted policies (included in Appendix B of this Review). The implemented policies are the following:

   Imposition of effluent limitations, principally under the National Pollutant Discharge Elimination System (NPDES) permit program provided for in Section 402 of the Clean Water Act of 1977, on industrial and municipal discharges, based on the Forum's 1977 "Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program;"

   "Policy for Use of Brackish and/or Saline Waters for Industrial Purposes;"

   "Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Intercepted Ground Water;" and

   "Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Fish Hatcheries."

3. Implementation of non-point source management plans developed by the states and approved by EPA.

Item 1 of the plan of implementation listed above is to be implemented by federal agencies in conjunction with state, local and private participants. The Forum works jointly with federal

agencies on developing the units and measures to be implemented. The Forum also urges Congress to appropriate needed funds and to amend legislative authorization when necessary. Items 2 and 3 above are primarily implemented by each of the Basin states.

The major components of this Review's plan of implementation are the federal programs. Table 3-1 summarizes the salinity control achieved by the federal participants under the Program's original authorities and the salinity control measures which must be implemented in order to meet the goal of approximately 1.48 million tons of salt-load reduction annually by 2015. These federal programs are described in detail in Chapter 4 of this Review.

**Table 3-1**
**Colorado River Basin Salinity Control Program**
**Plan of Implementation**
**1996 - 2015**
(Values in Tons/Year)

| AGENCY | MEASURES IN PLACE | POTENTIAL NEW MEASURES | TOTAL |
|---|---|---|---|
| **Bureau of Reclamation** | 375,500 | 480,000 | 855,500 |
| **U.S. Department of Agriculture** | 212,500 | 320,000 | 532,500 |
| **Bureau of Land Management** | 33,400 | 55,200 | 88,600 |
| **TOTAL** | 621,400 | 855,200 | 1,476,600 |

As Table 3-1 illustrates, under the Program's original authorities, a total of 621,400 tons of salt control has been achieved. Under the new authorities for both Reclamation and USDA and BLM's existing authorities, the costs per ton for salt control are estimated to be $50.00/ton for Reclamation and USDA and $30.00/ton for BLM. These estimated cost values are substantiated through salinity control expenditure experience to-date and the technical ability to actually implement these efforts through the Program. Consequently, in order to meet the goal of 1.48 million tons of salinity control by 2015, it will be necessary to fund and implement potential new measures which ensure the removal of an additional 855,200 tons. In order to achieve this increased level of salt-load reduction the federal departments and agencies will require the following funding commitments: Reclamation - $15 million/year; USDA - $10 million/year; and BLM - $1 million/year.

# CHAPTER 4 - PLAN OF IMPLEMENTATION - FEDERAL PROGRAMS

## Introduction

The involved federal agencies, working in close cooperation with the Forum, have identified salinity control measures that have been and may be implemented. The collective efforts of Reclamation, the USDA, and the BLM are identified and summarized in Table 4-1. Also, the USDA and BLM units described under the "Existing Authorities" heading reflect salt-load reduction activities that were completed as of September 1995.

It should be recognized that over time some of the salinity control measures now in the Plan of Implementation might not remove all of the projected salt and the costs of removal may increase. Other salinity control measures would then have to be substituted in order to maintain the numeric criteria while the Basin states continue to develop their compact-apportioned waters.

## Reclamation/USDA Units

The following paragraphs briefly describe the units which constitute the recommended implementation plan. Detailed information on each unit can be found in the following reports:

Quality of Water - Colorado River Basin, Progress Report No. 17, January 1995, U.S. Department of the Interior, U.S. Bureau of Reclamation.

Monitoring and Evaluation Report - for each of the salinity control units currently being implemented by the USDA Colorado River Salinity Control Program.

### *Units Completed*

Three Reclamation units (Meeker Dome, a portion of Las Vegas Wash and Grand Valley Stage I) are completed. These units are preventing 73,700 tons of salt per year from reaching the Colorado River.

### *Units Being Implemented*

*Paradox Valley (Reclamation)*: Local ground water comes into contact with the top of a natural salt formation where it becomes nearly saturated with sodium chloride and surfaces in the Dolores River channel in Paradox Valley, Colorado. The river picks up over 205,000 tons of salt annually from this saline ground water source as it passes through the valley.

**Table 4-1**
**Summary of Federal Salinity Control Programs**

| UNIT | TONS/YR REMOVED |
|---|---|
| MEASURES IN PLACE | |
| Meeker Dome (USBR) | 48,000 |
| Las Vegas Wash Pittman (USBR) | 3,800 |
| Grand Valley (USBR) | 131,300 |
| Paradox Valley (USBR) | 128,000 |
| Lower Gunnison Winter Water (USBR) | 41,400 |
| Dolores (USBR) | 23,000 |
| SUBTOTAL | 375,480 |
| Grand Valley (USDA) | 66,700 |
| Uinta Basin (USDA) | 83,600 |
| Big Sandy River (USDA) | 24,600 |
| Lower Gunnison (USDA) | 26,600 |
| McElmo Creek (USDA) | 11,000 |
| SUBTOTAL | 212,500 |
| Non-Point Sources (BLM) | 25,000 |
| Well-Plugging (BLM) | 8,400 |
| SUBTOTAL | 33,400 |
| TOTAL | 621,400 |
| POTENTIAL NEW MEASURES | |
| Uinta Basin (USBR) | 25,500 |
| San Juan - Hammond (USBR) | 27,700 |
| Price-San Rafael (USBR/USDA) | 161,000 |
| Paradox - Enhanced Treatment (USBR) | 52,000 |
| San Juan Hogback (USDA) | - |
| Grand Valley II Balance (USBR) | 27,300 |
| Lower Gunnison Laterals (USBR) | 64,000 |
| Grand Valley (USDA - EQIP) | 65,300 |
| Uinta Basin (USDA - EQIP) | 23,200 |
| Big Sandy River (USDA - EQIP) | 28,300 |
| Lower Gunnison (USDA - EQIP) | 139,400 |
| McElmo Creek (USDA - EQIP) | 35,000 |
| New Well Plugging (BLM) | 5,620 |
| Non-Point Sources (BLM) | 49,600 |
| Unidentified Measures (USBR) | 178,600 |
| SUBTOTAL | 855,200 |
| TOTAL | 1,476,600 |

The salinity control program involves pumping the saline ground water, thereby lowering the water table and reducing saline inflows to the Dolores River. The pumped brine is injected into a deep well in the Paradox Valley. About 128,000 tons of salt would be removed annually by this unit. There is the potential to increase this to 180,000 tons per year if sulfates can be removed from the brine prior to injection.

The injection test well, the brine pipeline, the surface treatment building, and the injection building have been completed and tested. The facility is scheduled to go into operation in FY-97.

*Grand Valley (Reclamation and USDA)*: The area within the Grand Valley Unit in western Mesa County, Colorado, contributes 580,000 tons of salt annually to the Colorado River. Most of the salts are leached from the soil and underlying Mancos Formation by ground water that is recharged by deep percolation from canal and lateral leakage and on-farm application.

The Reclamation program in the Grand Valley Unit is being implemented in two stages. Stage I, encompassing about 10 percent of the unit area, consisted of concrete lining 6.8 miles of the Government Highline Canal (GHC), consolidating 34 miles of open laterals into 29 miles of pipe laterals and installing an automated moss and debris removal structure. This work was completed in April 1983. Stage II construction began on the GHC system in the fall of 1986. Construction of the Price and Stubb Ditch systems started in 1991 under cooperative agreements with the Palisade Irrigation District and the Mesa County Irrigation District. Work on the Stage II systems will be completed in 1998. When completed, the Unit is expected to reduce salinity by 131,300 tons per year.

USDA published the plan for the Grand Valley on-farm program in 1977 and in 1980 prepared a supplement to include improvements to lateral systems. The plan, updated in 1994, identified a salt load reduction goal of 132,000 tons. The USDA program includes the installation of on-farm salinity reduction practices and lining or piping certain off-farm lateral systems which are needed to support the on-farm improvements. Implementation was initiated in 1979 under existing USDA authorities and in 1987 funding became available under the USDA Colorado River Salinity Control (CRSC) program.

As of September 30, 1995, a total of 3,431 annual Agricultural Conservation Program (ACP)/long-term agreements and CRSC contracts have been signed with participants. In addition, 48 farmers are ready to implement salinity reduction and wildlife habitat measures and have submitted applications for salinity control contracts. Because of insufficient USDA funds, salinity control contracts can be prepared and signed with only a limited number of these applicants during each year. Farmers have installed 513 miles of pipelines and ditch lining. Major improvements have been made on 22,900 acres of surface irrigation systems including over 5,165 acres of land leveling. In addition, 73 sprinkler systems and 50 drip systems have been installed. The total USDA annual salt load reduction as of September 30, 1995, is 66,700 tons.

*Uinta Basin (Reclamation and USDA)*: The area covered by the Uinta Basin Unit in northeastern Utah contributes about 450,000 tons of salt annually to the Colorado River System. Return flows from 204,000 acres of irrigated land account for most of the salt contribution. Reclamation identified about 56 miles of the total 240 miles of canals and laterals in the Uinta

Basin that could be cost-effectively lined. Implementation of the Reclamation portion of this unit would reduce the salt load to the Colorado River by an estimated 21,000 to 30,000 tons/yr. The final planning report/environmental impact statement (EIS) on the unit was filed with the EPA and released to the public in 1987. (Implementation of this portion would be under the new program).

USDA published the Uinta Basin Salinity plan in 1970 and in 1987 prepared a supplement to include lateral systems. In 1991 the Uinta Basin Unit was expanded to include treatment on adjacent irrigated land. The plan identifies a salt load reduction goal of 106,800 tons. The USDA program includes the installation of on-farm salinity reduction practices and lining or piping lateral systems. The major emphasis is conversion of inefficient surface irrigation to sprinkler systems. Implementation was initiated in 1980 under existing USDA authorities, and in 1987 funding became available from the Colorado River salinity control program.

As of September 30, 1995, a total of 1,885 annual ACP/long-term agreements and CRSC contracts have been signed with farmers. Also 280 farmers, who are ready to implement salinity reduction and wildlife habitat measures, have submitted applications for salinity control contracts. However, contracts can be prepared and signed with only a limited number of these farmers each year because of inadequate USDA funding. Over 793 miles of underground pipelines and concrete lined ditches have been installed and 2,500 acres of land leveled. Over 1,630 sprinkler systems have been installed on 84,500 acres and approximately 254 surface systems have been improved on 13,300 acres. Irrigation water management is being applied on 70,400 acres. The total salt load reduction achieved through September 30, 1995, is 83,600 tons/yr.

*Lower Gunnison Basin (Reclamation and USDA)*: The Lower Gunnison Basin Unit is located in west-central Colorado. An estimated 360,000 tons of salt are contributed annually to the Colorado River. Public Law 98-569, the 1984 Act, authorized portions of the unit for construction by Reclamation. Construction of the winter water portion of the unit is designed to eliminate ditch seepage during the non-irrigation season by providing a piped delivery system for livestock water. This component will be completed in 1996 and will reduce salinity by 41,380 tons per year. Studies on the ways to reduce the cost of the canal and lateral lining portion of the project have been completed. They would reduce salinity by an additional 64,000 tons per year.

The Lower Gunnison Basin USDA plan, updated in 1994, identifies a salt load reduction goal of 166,000 tons. The USDA program includes the application of on-farm salinity reduction practices on 169,000 irrigated acres and improving off-farm irrigation laterals. Implementation was initiated in 1988.

As of September 30, 1995, 267 salinity contracts have been signed with participants. In addition 440 farmers have submitted applications for salinity control contracts, but contracts can be prepared and signed with only a limited number of these farmers each year because of inadequate USDA salinity control program funds. Farmers have installed over 210 miles of pipelines and concrete lined ditches. Fifty-seven sprinkler systems have been installed, 1,507 acres of land leveled and 431 surface systems improved. A salt load reduction of 26,600 tons/yr has been accomplished through September 30, 1995.

*Big Sandy River (USDA)*: The Big Sandy River Unit is located in southwestern Wyoming. Below Big Sandy Reservoir, water is diverted to irrigate lands in the Eden Project. Irrigation seepage into shallow aquifers near the Big Sandy River is the source of saline seeps. These seeps and springs below the Eden Project contribute about 116,000 tons of salt, and tributaries contribute about 48,000 tons of salt annually to the Green River.

The USDA Big Sandy River Unit plan was published in 1988. The USDA salinity control program consists of converting 15,700 acres of on-farm surface irrigation to low-pressure sprinkler systems. When fully implemented, the on-farm program will reduce the salt loading by 52,900 tons/yr.

As of September 30, 1995, 76 salinity contracts have been signed with participants. Also 12 farmers have submitted applications for salinity control contracts, but inadequate USDA funds allow the preparation and signature of contracts with only a limited number of these farmers each year. Seventy-six sprinkler systems have been installed on 6,626 acres, 3 surface systems have been improved on 56 acres and 28 miles of pipeline have been installed. As of September 30, 1995, an annual salt reduction 24,600 tons has been accomplished.

*Dolores Project/McElmo Creek (Reclamation and USDA)*: Irrigation and other non-point sources in the McElmo Creek area of southwestern Colorado result in an estimated salt load of 119,000 tons/yr to the Colorado River.

Salinity control as an added feature of the Dolores Project, already under construction by Reclamation, was authorized by the 1984 amendment to the Salinity Control Act. Reclamation modified the design of Towaoc Canal to allow abandonment and consolidation of certain ditches and is in the process of lining other ditches and installing piped laterals to reduce salt loading from ditch seepage. These improvements, scheduled for completion in 1996, are expected to reduce salinity by 23,000 tons per year.

The McElmo Creek Unit plan was described in the Natural Resources Conservation Service's (NRCS) 1989 Environmental Impact Statement. The plan, updated in 1994, will remove 46,000 tons/yr of salt from the Colorado River. The plan will provide for the installation of sprinkler irrigation systems on 19,700 acres, including 268 miles of pipeline, and surface improvements to another 1,800 acres.

As of September 30, 1995, a total of 192 contracts have been signed with participants. In addition, 185 farmers have submitted applications for salinity control contracts. These farmers are ready to implement salinity reduction measures, but only a limited number of contracts can be prepared and signed because of inadequate funding. Since the program was initiated, 102 miles of pipelines and 197 sprinkler systems on 3,847 acres have been installed. The salt load reduction accomplished to date is 11,000 tons/yr.

## Units Under the New Program

*San Juan River-Hammond (Reclamation and USDA)*: The San Juan River Unit drainage contributes approximately one million tons of salt annually to the Colorado River Basin. In the Hammond area, Reclamation has completed a planning report/EIS. The recommended plan proposes to line all unlined sections of the Hammond Project Irrigation system. The estimated salt load reduction would be 27,700 tons/yr. NRCS completed an investigation in 1992 to explore the potential for a USDA program in the San Juan River Basin in the Hammond area. Investigations indicated that a USDA on-farm program is not cost-effective in this area.

*Price-San Rafael Rivers (Reclamation and USDA)*: An estimated 430,000 tons of salt annually reaches the Colorado River from these two river basins. The Price and San Rafael rivers, tributaries of the Green River, are 120 miles southeast of Salt Lake City. The final planning report/EIS was completed and issued in December 1993. The preferred plan would reduce salt loading to the Colorado River by an estimated 161,000 tons per year.

Other units that have not been fully investigated but have some potential under the new program include: San Juan-Hogback (USBR/USDA); Uinta Basin I (USBR); Glenwood Springs Desalinization (USBR); Sinbad Valley (USBR/BLM); Dirty Devil River (USBR); Grand Valley II Balance (USBR); and, Lower Gunnison North Fork (USBR).

## Bureau of Land Management

The BLM is continuing the implementation of actions which will minimize salt discharge to the Colorado River system. To ensure Basin-wide technical consistency, appropriate watersheds are being ranked by federal and state interagency teams in order to establish relative salinity control priorities. These watershed rankings have been completed in Arizona, Colorado, Utah, and Wyoming, however, they have not yet been initiated in Nevada or New Mexico. Additionally, Resource Management Plans are being implemented through plans which focus on smaller geographic areas. These plans (often a multiple resource plan or allotment management plan) may prescribe management activities, land treatments, and/or structural projects for salinity control.

For the past several Review periods, the Resource Management Planning process has been the primary mechanism for making BLM land use decisions, and it has also served as an important first step in BLM salinity control program implementation. Recently, BLM has placed more emphasis on resolving resource management issues and problems in full collaboration with other federal, state, Tribal, and local governments and agencies, as well as the general public. As a result of these developments, BLM's resource management decision-making process has become more participatory and collaborative. For example, through the active involvement of the citizen-owners of the eight Resource Advisory Councils (RAC) in the Colorado River Basin, the development of shared state/regional standards and guidelines for rangeland health will occur.

Analysis and assessment activities in support of resource planning will be ongoing, and will focus on issues like ecological health, restoring resources at risk, sustaining development, and

other goals and standards established during decision-making at the national, regional, state, and local levels.

Activity plans, which traditionally have been more detailed and focused on smaller land units with significant resource pressure, will become much more integrated. The BLM will continue to develop and favor focused interdisciplinary monitoring and assessment methodologies which serve multiple purposes over single purpose techniques and efforts.

## Well Plugging Activities

As the agency responsible for leasing all federally-owned mineral resources, opportunities occur for BLM and cooperating agencies to reduce saline water discharge from oil and gas operations. Production water disposal requirements are outlined in "Notice to Lessees and Operators of Federal and Indian Oil and Gas Operations". BLM has worked closely with the New Mexico Oil Conservation Division to plug several orphan wells having no clear owner, and BLM anticipates many more wells can be plugged under this industry-funded program.

Control of point sources (either flowing wells or springs) by the BLM at various locations has reduced approximately 8,400 tons/year of salt discharge, and non-point source salinity control measures have been completed which control 25,000 tons/year.

Flowing wells and springs continue to be controlled at various locations. It is estimated that another 5,600 tons of salt reduction can be accomplished at known point sources. Combined, all of the BLM salinity control measures (units underway and/or identified as potential, including well plugging and non-point sources) will prevent 88,600 tons of salt from entering the Colorado River system.

The onshore oil and gas program is one of the major mineral leasing programs for the Department of the Interior. At the end of Fiscal-Year 1995, there were 19,000 leases in production status. For Tribal lands, the BLM is also responsible for operational management oversight of 4,200 producing leases, drilling supervision on non-producing leases, and advising the Bureau of Indian Affairs, Tribal officials, and allottees concerning leasing matters. Interest in oil and gas activity in the Colorado River Basin is widespread with the exception of Arizona.

In the San Juan Basin, BLM has continued to assess oil and gas well-plugging opportunities which were identified at the conclusion of the interagency study of Navajo aquifer salinization (Aneth-Ismay oil field). In the Aneth area, there are several flowing wells for which BLM has mineral responsibility. Each of these wells is high risk because of the past use of dynamite and other temporary measures. Currently, the Farmington District has not identified any funds to plug these wells.

During the past three years there have been 15 wells which were abandoned by a failing oil field operator in the San Juan Basin. Two were plugged by the State of New Mexico; five by the BLM; and the remaining eight were plugged by Tenneco who bought the leases following abandonment. The major concern addressed by these pluggings was underground salt water and oil contaminated fresh water, and discharges to the San Juan River. Neither the hidden salt

savings, nor salt saved at the surface, have been estimated. Opportunities exist in the Moab and Rock Springs Districts for plugging additional flowing wells, however, salinity control funds which are annually identified in the BLM budget justification (Washington, D.C. level) generally lose their identity when funds are aggregated at the State Offices. Therefore, well plugging opportunities identified by Field Offices may go unfunded.

In the Monument Butte Oil Field of northeastern Utah, mitigation work has been performed as an offset for surface disturbance and possible diffuse source salt-loading of oil and gas drillpads. Improvements have been made in support of road construction and maintenance. Numerous erosion control structures have been funded by private operators to reduce non-point source loading from saline fields in this field.

## Nonpoint Sources Salinity Control Activities

Soil, Water, and Air Activity (SWA): This program provides for the protection of watershed values and function on the public lands. Its core purposes are to reduce salinity, sediment, and other non-point source pollutant discharge from the public lands in order to protect and enhance water resources. Currently, this program activity provides a salt-load reduction of approximately 10,400 tons.

Watershed improvement practices funded by the SWA activity at the Fort Pearce project in Arizona are creating salt savings. In Colorado's Grand Valley, and on the Grand Mesa slopes, BLM personnel are working with recreation specialists to reduce the impact of off-highway vehicles (OHV) on Mancos shale-derived soils and on steep dissected slopes. The White River Resource Area is implementing salinity controls on the Baking Powder portion of the Lower Wolf Creek project. Also in the White River Basin, controls were started in 1993 and continue in the Evacuation Creek drainage. At White Face Butte, numerous small watershed control structures have been constructed. The Dry Creek Basin Coordinated Range Management Plan (RMP) is being implemented in part with funds from a Section 319 Clean Water Act grant to the San Miguel Soil and Water Conservation District.

In the Little Colorado River drainage, salt savings have been achieved on 5,073 acres with the installation of sediment traps. On BLM roads and rights-of-ways in New Mexico, maintenance and corrective measures have been taken to minimize sediment transport from saline soils. Sediment detention reservoirs (Sager's Wash) and sagebrush roller chopping (Nash Wash) have created salt savings, as has the trapping of suspended sediment by the Pariette wetlands. In Utah, the Richfield District has stabilized saline sediments with channel structures and reseeding at Meadow Gulch, creating significant salt savings.

The Round Valley, Utah, project would remove 350 tons/year of salt from Colorado River tributaries. Preliminary engineering studies have been conducted on a potential site for a large sediment control structure, but funds are lacking. The Birch Creek, Blind Trail, Factory Butte, and Last Chance areas in the Richfield District have been assessed for potential salinity control projects.

In Wyoming, BLM continues to work with private users and permittees to reduce sediment and salt problems caused by the existing roads of the Red Creek Basin. In the Cedar Canyon area, Union Pacific Resources has been cooperating with BLM in the stabilization and halting of erosion associated with roads in the region.

Monitoring at two climatological and 82 watershed sites is proceeding to support more salinity control activities in the Richfield and Cedar City Districts, and the Vernal District's Castle Peak project. BLM was also engaged in a cooperative monitoring effort with Reclamation at Sager's Wash, Utah until the end of fiscal-year 1995. A gaging station is planned at the mouth of Bullfrog Creek, just above Lake Powell and will be operated under interagency agreement by the USGS' Water Resources Division (subject to final appropriations). Investigations of salinity control opportunities are underway in the Bullrush Draw (Kaibab Creek), Clayhole and Hurricane Wash areas of Arizona, and in Colorado's Vermillion Creek.

Rangeland Activity: The major program objective of rangeland management as it pertains to water quality of the Colorado River system is to implement standards and guidelines which protect water sheds and minimize erosion, saline discharges, flooding, sedimentation, and water quality damages. The development of regional and local standards and guidelines for uses affecting rangelands will be significant effort through 1997. The BLM State Directors, in consultation with the Resource Advisory Committee and others, will develop standards and guidelines tailored to local conditions. Currently, this program activity provides a salt-load reduction of approximately 9,400 tons.

Improved distribution of livestock and changes in season of use has occurred in Arizona. Colorado has improved the distribution of livestock on 20,000 acres of Mancos Shale, and watershed cover has improved. With Castle Peak and Goslin (Utah) RMPs implementation, the forage utilization and season of use changes have generated quantifiable salt savings. Improvement in watershed function has been implemented on 90 percent of the allotments within Wyoming's Muddy Creek watershed. This has increased upland and riparian plant cover, decreased peak flows, reduced channel erosion, and has encouraged the storage of salt-laden sediments.

The Federal Land Policy and Management Act of 1976, as amended, provides that 50 percent of grazing fees are authorized to be appropriated for range betterment, as discussed in the next section. Half of the appropriated amount is to be spent in the same BLM District which generated the receipts. The remaining half may be utilized as the Secretary of the Department of the Interior may direct.

Range Improvement (Betterment) Activity: The principal objective of this activity is to improve the productivity of public rangeland ecosystems to benefit livestock, wildlife, riparian, and watershed protection by means of constructing/implementing on-the-ground physical improvements that have proven successful in increasing the productivity of arid and semi-arid western rangelands. Through range improvement implementation, Colorado has improved the livestock distribution on, and utilization of, 20,000 acres of rangeland. Currently, this program activity provides a salt-load reduction of approximately 1,100 tons.

This activity funded plowing and seeding of 400 acres of sagebrush-dominated rangeland in the San Juan Basin. Excellent herbaceous cover was achieved, which will improve the ability of the site to infiltrate precipitation, thus keeping water on-site, and reducing the loss of saline sediments and dissolved solids. Tebuthiuron treatment of another 9,710 acres of sagebrush (selective thinning) has improved the water handling ability of another San Juan River tributary. In the Kanab Resource Area of southern Utah, a water pipeline for improved livestock distribution and prescribed burning and seeding project have contributed to salt savings. Two detention ponds in Richfield have also helped. In the Rawlins District of Wyoming, the George Dew rangeland dike removes a large portion of the sediment and salt which was being passed by the channel system.

Riparian Activity: The BLM will manage riparian-wetland and aquatic zones to achieve healthy and productive conditions for long-term benefits and values, with the objective of restoring and maintaining riparian-wetland areas so that 75 percent or more of the areas are in proper functioning condition by 1997. The BLM riparian assessment techniques reports riparian area condition, trend and health into one of four categories: (1) proper functioning; (2) functional-at-risk; (3) nonfunctional; and (4) unknown. Currently, this program activity provides a salt-load reduction of approximately 900 tons.

In Colorado, improvement in plant cover by establishment of riparian pasture and off-channel livestock watering has created a salt savings. Utah has also implemented protective riparian management practices with salt- saving benefits.

Wild Horses and Burros Activity: Wild horses and burros typically occupy rangeland areas on the public lands in common with livestock and wildlife. The long-term numbers of each group that can be properly sustained in each area is determined through the land use planning process, based upon habitat requirements such as water and forage. Currently, this program activity provides a salt-load reduction of approximately 60 tons.

The ability to attain a thriving, natural, ecological balance (as required by the Wild Free-Roaming Horse and Burro Act) is primarily dependent on the ability of the BLM to control these populations through the removal of excess animals. Removal of 350 head along the Lower Colorado River corridor has benefitted plant cover by reducing forage consumption in the Cibola, Havasu, Black Mountain, and Gold Butte Herd Management Areas. Salt load reductions will affect tributaries into Lake Mead. A reduction of 100 head has been completed in Spring Creek, southwestern Colorado, allowing for vegetative recovery.

Wildlife Activity: This activity includes all facets of managing and protecting wildlife and fisheries habitat on the public lands with the objective of ensuring optimum habitat and a natural abundance and diversity of fish and wildlife resources. BLM also manages wetlands and other important waterfowl habitats on the public lands to help perpetuate a diversity and abundance of waterfowl. Currently, this program activity provides a salt-load reduction of approximately 840 tons.

In the Pariette Wetlands, the BLM has implemented measures which encourage the trapping and overbank storage of saline sediments. Vegetative chopping (roto-chopping) of

decadent brush stands, water developments, and application of prescribed burning have all created salt savings through the improvement of watershed cover in western Colorado.

Recreation Management Activity: The primary objectives are to provide quality recreational opportunities that fosters land health, minimize resource damage, protect wilderness values, and assure a fair market return to the public for any commercial venture profiting from the public land resources. Currently, this program activity provides a salt-load reduction of approximately 110 tons.

Road surfacing in the Yuma District's La Posa Long-Term Visitor Area reduced erosion. Implementation of OHV management measures in the Milk/Alkali drainage near Glenwood, and of the slopes of the Grand Mesa is creating salt benefits.

Administration of Mining Law Activity: An estimated 305,000 actively maintained mining claims exist on public lands administered by the BLM. As part of Mining Law Administration, the BLM enforces surface management and environmental requirements based upon approved mine operations plans and 43 C.F.R. §3802. Currently, this program activity provides a salt-load reduction of approximately 1,150 tons. Responsibilities of the BLM for surface protection and environmental stipulations under the 1872 Mining Law has resulted in over 1,000 tons/year salt savings from the public lands in Utah.

Facilities Maintenance, Emergency Operations/Damage Repair, and Fire Rehabilitation Activities: Facilities maintenance provides maintenance to BLM administrative sites, recreation facilities, transportation systems as well as basic engineering support services for maintenance and construction activities. The providing of immediate response in the form of personnel, equipment, or supplies for emergency repair or replacement of government property destroyed or damaged by catastrophic acts of nature (non-wildfire) such as floods, storms, and other unavoidable cause is the emergency operations/damage repair activity. Fire rehabilitation covers the costs incurred to prevent land degradation, resource losses, and other measures necessary to stabilize erodible soils, structures, or other conditions caused by fires or wildfire suppression actions. Currently, this program activity provides a salt-load reduction of approximately 960 tons.

The Flathead Dam repairs were completed in Arizona. Over 75 miles of roads were maintained in Mancos Shale-derived soils in Colorado with some Legacy-99 funds, and mining company funds. Burned area rehabilitation was conducted on 5,735 acres of saline soils in Colorado, and 10,600 acres in southern Utah.

## U.S. Fish and Wildlife Service (FWS)

The authorities set forth in the Endangered Species Act, Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act and the Migratory Bird Treaty Act, provide for FWS participation in the Colorado River salinity control program. It is mainly through these legislative authorities that the FWS works toward meeting its objective of providing the federal leadership to conserve, protect, and enhance fish and wildlife and their habitat for the continuing benefit of the public.

There is a biological diversity of fish and wildlife resources and a great number of unique species in the Colorado River Basin. This river system has one of the largest lists of threatened and endangered fish and wildlife species in the United States as well as significant other resources, including migratory birds and waterfowl, non-migratory birds, big game, plus the wetlands, riparian lands, and other habitats that support these wildlife.

In general, FWS activities consist of evaluating proposed salinity control projects of Reclamation, USDA and the BLM, and preparing related Fish and Wildlife Coordination Act reports, Planning Aid Memorandums, biological opinions, and commenting on Draft Environmental Impact Statements and biological assessments. The Salt Lake City Field Office provides the overall program coordination for the FWS.

FWS participation in the planning process for the salinity control program is provided through a variety of planning/working/coordinating interactions with Reclamation, SCS, EPA, BLM, the Forum, state agencies, Indian tribes and the general public. Lists of threatened and endangered species that may occur in the salinity control project areas are provided by the FWS. Biological opinions are formulated by the FWS for projects where threatened or endangered species may be affected.

Controversy has arisen over the anticipated effects of salinity control measures on wetlands. Replacing the loss of irrigation-induced wetlands may result in conflicts between the primary objective of salinity control, protection of water quality, and other regulatory programs requiring the replacement of wetland values lost.

Much of the salt load is attributed to seepage from leaking irrigation water distribution systems and deep percolation from inefficient on-farm irrigation. This seepage and deep percolation also provides the source of water for many of the irrigation-induced wetlands in the salinity project areas. As seepage and deep percolation are reduced, some of the irrigation-induced wetlands will be unavoidably lost.

Authorization of several new salinity control projects will require increased review by the FWS to ensure protection/replacement of wetlands lost due to construction and operation of new features. USDA's authorization to mitigate incidental fish and wildlife values foregone on a voluntary basis was not strengthened by FAIRA, therefore, the FWS will need to monitor the ability of the NRCS to achieve adequate compensation both in proportion to and concurrent with their construction program. Concepts such as mitigation banking will continue to be explored by participating state and federal agencies to accomplish satisfactory progress.

## U.S. Geological Survey (USGS)

The USGS's Water Resources Division provides and analyzes hydrologic information to assess the Nation's water resources. Programs are developed with cooperation and financial support from state, local and other federal agencies. The programs provide hydrologic and geochemical information for evaluation of surface and ground water systems as well as for management and policy decisions.

To provide information required by the federal, state and local agencies to address Colorado River water quantity and quality issues, the USGS operates and maintains a network of about 520 stream gaging stations and 140 water quality stations in the Colorado River Basin. Streamflow and water-quality information from these stations provide input to the hydrologic database for Reclamation's Colorado River Simulation System. In addition to collecting hydrologic data, the USGS conducts specific studies on surface water, ground water and water quality.

**Environmental Protection Agency (EPA)**

The major EPA programs relating to Colorado River salinity control are: (1) water quality management planning; (2) water quality standards; (3) National Pollutant Discharge Elimination System (NPDES) permits; (4) review of National Environmental Policy Act (NEPA) documents; (5) nonpoint source control under Section 319 of the Water Quality Act of 1987; (6) wetlands protection; and (7) the Underground Injection Control (UIC) Program. For the most part, these programs are either implemented by the states under federal statute (such as the water quality standards program) or delegated to the states by EPA (such as the NPDES program). EPA maintains oversight responsibilities for the assumed and delegated programs, and has responsibility for reviewing and approving water quality standards, including those for salinity. EPA continues to encourage the Basin states to develop and implement the basin-wide and state salinity control strategies.

Section 303 of the Clean Water Act (CWA) requires states to adopt water quality standards, pursuant to their own laws, that are consistent with the applicable requirements of the CWA. The Colorado River Basin Salinity Control Forum, through its Work Group, has been re-affirming the numeric criteria for salinity and developing a new basin-wide plan of implementation for salinity control for the seven basin states every three years to satisfy the triennial review requirements of the CWA. Following adoption of the standards by each state, it is the responsibility of the EPA regional administrators to approve or disapprove the standards based on consistency with CWA requirements.

NPDES permits are issued by EPA for the two non-delegated states in the basin (Arizona and New Mexico), including Indian tribes. In Arizona, the State drafts the permits for Arizona waters consistent with the Forum's NPDES policies. The State also provides the public notices. EPA Region IX drafts and issues the permits for tribal waters consistent with the Forum policies. EPA Region IX issues NPDES permits for Navajo lands in all three EPA regions. EPA Region VI drafts and issues permits for other Tribal and State waters in the New Mexico portion of the basin consistent with Forum policies. EPA Region VIII issues the NPDES permits for federal and Indian facilities in the Colorado River basin in Colorado. Salinity requirements for these permits are reviewed and added where needed during the permit re-issuance process.

Pursuant to Section 309 of the Clean Air Act, EPA reviews NEPA environmental assessments and environmental impact statements for both salinity and non-salinity control projects of other agencies. Through review of NEPA documents, EPA urges the identification of potential salinity impacts and encourages discussion of mitigation of adverse impacts as required by the

Council on Environmental Quality regulations for implementing NEPA (40 CFR Parts 1500-1508). For example, EPA can comment on potential salinity impacts, when appropriate, when reviewing EIS's for grazing and land management, recreational developments, mining and water development projects. In addition, EPA encourages the development of mitigation measures for adverse impacts to satisfy state and Forum policies for salinity control and through CWA Section 401 certifications for activities subject to federal permitting actions. The Forum policy encouraging the use of water with higher total dissolved solids for industrial purposes is being supported primarily through NEPA review responsibilities.

The basis for wetland protection and mitigation is established in the regulations for compliance with NEPA, Section 404 of the CWA, Executive Order 11990, and USDA policy. However, preserving irrigation-induced wetlands and reducing salt loading to the Colorado River may present conflicts between authorizing legislation and other regulatory programs. A portion of the salt load in the Colorado River system is attributed to seepage and deep percolation from leaking irrigation canals and laterals, and inefficient on-farm irrigation systems and water management. Some of these inefficient irrigation systems and practices are the source of water for many of the wetlands associated with salinity control units. As seepage from irrigation systems is reduced and irrigation efficiencies are improved, some portion of these irrigation-induced wetlands may be impacted or lost. The concept of replacing irrigation-induced wetlands and the need to reduce the salt load in the Colorado River presents difficult choices between environmental values of improved water quality and wetland preservation. Landowners are volunteering to implement wildlife habitat practices, including wetland replacement, as was contemplated by the Salinity Control Act. EPA utilizes NEPA review and other types of coordination with state and federal agencies as the means to participate in wetland assessment, monitoring, replacement and reporting activities.

Section 319 funds have been appropriated since Fiscal Year 1990 for the states to implement nonpoint source water pollution control programs. EPA encourages the states to consider salinity control benefits as they make decisions on Section 319 funding for their priority watersheds.

EPA Region VIII administers the UIC permit for the Paradox Well salinity control project in Colorado.

# CHAPTER 5 - PLAN OF IMPLEMENTATION - STATE PROGRAMS

## Overview

Important components of the plan of implementation for salinity control are the Basin states' activities associated with the control of total dissolved solids through the National Pollutant Discharge Elimination System (NPDES) Permit program and the water quality management plans. Each of the states has adopted the Forum policies presented in Appendix B. A listing of the NPDES permits in force within the Colorado River Basin are presented in Appendix D. During the period of this review, the status of implementation of the NPDES permits and the water quality management plans in each of the states is as follows.

## Arizona

### NPDES Permits

Authority for issuing NPDES permits has not been delegated to the state and still resides in the Region IX office of EPA. Arizona is currently operating under an "interim" plan in which the state prepares the permit, solicits public comments and involvement, and forwards the final draft to EPA for approval and issuance.

Arizona, in drafting NPDES permits for industries throughout the Colorado River Basin within the state above Imperial Dam, follows the Forum's policy regarding salinity control. Reuse of treated wastewater is encouraged as a general principle.

Presently there are 48 discharges in Arizona that are subject to the NPDES program and drain into the Colorado River above Imperial Dam. There are:

| | |
|---|---|
| Municipal/Quasi-Public (Including Federal/Indian Reservation Facilities) | 44 |
| Industrial | 4 |

One industrial facility is under a Clean Water Act, Section 308 Order, for discharging without a NPDES permit.

The Department of Environmental Quality annually reviews monitoring reports of facilities potentially discharging under NPDES permits. No permitted facility is discharging more than one

ton per day or 350 tons/yr of TDS; and in most cases discharges are to ephemeral tributaries which are remote from the main stream of the Colorado River.

### Water Quality Management Planning

The Northern Arizona Council of Governments (NACOG) is the designated area-wide water quality planning agency for the Colorado River and its tributaries in the northeast and north central parts of the state, while the Western Arizona Council of Governments has similar responsibilities for Mohave, La Paz and Yuma Counties. The NACOG area-wide 208 Plan is in the update process which was last updated in 1993.

The Western Arizona Council of Governments (WACOG) had similar responsibilities for Mohave, La Paz, and Yuma Counties until they de-designated from the program in 1993. La Paz County has expressed interest in becoming the designated planning agency for its area while the State is the current planning agency for the other two counties at this time.

### Other Activities

In 1986, the Arizona State Legislature adopted the State Environmental Quality Act (H.B. 2518). The Act established a new Department of Environmental Quality on July 1, 1987. The water quality staff of the Department is developing programs to protect the quality of both surface and ground water, including point source and nonpoint source management, permitting, and pesticides management. The State Nonpoint Source Water Quality Assessment and Management Plan reports have been approved by EPA and demonstration projects are being evaluated. The State Nonpoint Source Management Plan provides for consistency reviews in accordance with Section 319(k) of the federal Clean Water Act. Consistency reviews provide an effective mechanism for states to ensure proposed projects and programs contribute to improved water quality management. Categories of projects and programs related to salinity control include irrigation systems, salinity control projects impoundments, diversion and rangeland management. Also, a comprehensive Aquifer Protection Permit (APP) program, established in 1986 and implemented by rule in 1989, requires permits for most activities that discharge, including point source discharges to Arizona's surface water bodies.

## California

### NPDES Permits

The California Regional Water Quality Control Board, Colorado River Basin Region (Regional Board), issues the NPDES permits for navigable waters and Waste Discharge Requirements for land discharges within the Colorado River drainage portion of the state. In

issuing and reissuing waste discharge requirements, the Regional Board complies with all Forum policies. In addition, the Regional Board has included in the discharge permit requirements for land discharges a prohibition of brine backwash from water softeners into evapo-percolation ponds which overlie ground waters which are in hydraulic continuity with the Colorado River System. Industrial discharges are to be confined in impervious evaporation basins.

### Water Quality Management Planning

The Water Quality Control Plan for the Colorado River Basin was adopted by the Regional Board in November 1993. Following public hearings, the updated plan was adopted by the Regional Board and approved by the State Water Resources Control Board in February 1994. The revised plan became effective upon approval of the Office of Administrative Law in August 1994. The salinity control component of the water quality plan is consistent with the Forum's plan of implementation for salinity control. The Regional Board is working with local entities and the Colorado River Board of California to ensure that implementation of the water quality plan is achieved.

### Other Activities

State Water Resources Control Board policy 75-58 established priorities for the use of poor quality waters for cooling of inland power plants and has been in effect since 1975. The State Water Resources Control Board has included salinity control in the Colorado River among its top priority items.

## Colorado

### NPDES Permits

Administration of the NPDES permit program was delegated to the State of Colorado, Water Quality Control Commission (WQCC), by the EPA in May, 1978. The Commission's regulation for implementation of the Colorado River Salinity Standards reflect all of the Forum policies adopted to date. All existing, new or reissued permits require compliance with this regulation.

Currently there are 338 NPDES permits in the Colorado River Basin portion of the state, of which 145 are domestic or municipal and 193 are industrial facilities. Of this total, there are 8 major industrial permits and 24 major municipal permits.

Colorado is continuing to insure that the Forum's policies are implemented through the WQCC regulations. Monitoring is in place for all permits in the basin. Industrial and municipal permittees who cannot meet the Forum's policies of no salt return or the 400 mg/L incremental

increase are required to conduct studies to demonstrate that meeting these standards is not practicable.

## Water Quality Management Planning

In the Colorado River Basin of Colorado there are four water quality planning regions. Opportunities for salinity control were identified in the management plans for all areas of the Colorado River Basin within Colorado. Critical salt yielding areas were assessed by the USDA, Colorado Soil Conservation Board and local soil conservation districts. All updated 208 plans continue to contain lists of the NPDES permits within each area and stream classifications.

Region 9 covers primarily the San Juan Basin portion of Colorado. Salinity projects in this area include McElmo Creek and portions of the Dolores Project. The Region 10 plan covers primarily the Gunnison and Dolores River Basins. Salinity projects in this region include the Lower Gunnison and Paradox Valley units. Region 11 includes the Colorado main stem below Dotsero, and the lower reaches of the White and Yampa Rivers. The salinity control projects in this region are Grand Valley, Glenwood-Dotsero and Meeker Dome. Region 12 is comprised primarily of the high mountain headwaters of the Colorado River and produces little salt loading to the river system. The updated Water Quality Management Plan for this region has been certified by the state and submitted to EPA for approval. The regional plan directs salinity control efforts towards control of point sources and local control of nonpoint sources in the form of urban runoff restrictions.

## Nonpoint Source Program

Pursuant to Section 319 of the amended (1987) Clean Water Act, Colorado developed a "Nonpoint Source Assessment Report" which identified stream segments impacted by nonpoint source pollution and categories of nonpoint source pollutants which added significant pollution to those stream segments. The report also recognized the impacts caused by salinity from nonpoint sources on several stream segments and principally attributed the elevated salinity levels in those segments to agricultural activities (i.e. irrigation and soil erosion due to grazing). It further recognized the significance of the salinity control efforts which have been made pursuant to the Colorado River Basin Salinity Control Act of 1974. The assessment report also recognized the need for development of best management practices (BMPs), to control nonpoint source pollution and a handbook of BMPs was completed in May 1989.

The "Colorado Nonpoint Source Management Program" was completed by the State and approved by EPA in May 1989. The program is intended to provide an implementation strategy for the future treatment of water quality problems identified in the Assessment Report. The program sets forth the roles and responsibilities of the various subcommittees; which include

representatives from local, state, federal and private organizations, that are responsible for implementing the nonpoint source program in Colorado. The program includes:

1. A description of each committee's membership and tasks it undertakes;

2. A priority system for reviewing, ranking and recommending nonpoint source control projects, to establish their eligibility to receive state and federal monies set aside for such projects; and

3. A description of the management program and BMP's utilized by each subcommittee (agriculture and silviculture, urban and construction runoff, mining impacts and hydrologic modifications).

Several nonpoint source control projects, for both statewide management and individual nonpoint source control, which will reduce salinity in the Colorado River Basin have been approved by the subcommittees for implementation. Other projects are contemplated and will be implemented as project plans are developed and funding becomes available. The most recent annual report on Section 319 activities was prepared in October 1992.

## Other Activities

Colorado has continued its support of the basin-wide approach to salinity control through its participation in the Colorado River Basin Salinity Control Forum and associated activities.

The Colorado Soil Conservation Board, with support from other state agencies, is continuing its work with the NRCS, CFSA and local soil conservation districts to direct, as appropriate, available federal soil conservation funding programs towards improvement of on-farm irrigation practice. The salinity control benefits of improved practices are one of the reasons for this effort.

A proposal for a federal-private desalinization project at Glenwood Springs has been submitted by a private developer. The proposal calls for desalting saline water from the Glenwood Springs, with the salinity program paying for the tons of salt actually removed. Unfortunately, the project does not appear to be economically feasible at this time and further planning efforts have been suspended.

## Nevada

### NPDES Permits

EPA has delegated the Nevada Division of Environmental Protection (NDEP) authority to issue NPDES Permits. Basic Management Industries (BMI) has eliminated industrial wastewater discharges to Las Vegas Wash. BMI now pipes wastewater to lined ponds where it evaporates. Two of the companies have been issued permits which allow discharge of cooling water to Las Vegas Wash with a limit of no more than 75 mg/L TDS greater than the water supply. Another Basic Management company has been issued a permit which allows discharge of surface storm water runoff.

In the past, the Nevada Power Company (Company) discharged brackish cooling water from both the Clark and Sunrise Power Plants into Las Vegas Wash. Permits now prohibit such discharges and the Company treats and recycles water for further cooling before final disposition into lined evaporation ponds. The new recycling process has reduced the cooling water requirement by about 75 percent.

The City of Las Vegas and Clark County Sanitation District (CCSD) were issued new discharge permits in January 1992. The City and County permits allow a flow of up to 66 and 90 million gallons per day (MGD), respectively, through January 1997. The permits include Waste Load Allocations (WLA) for total phosphorus and total ammonia, whole effluent toxicity testing, chlorine residual limits, and an ambient monitoring program in Las Vegas Wash and Las Vegas Bay. The WLA for total phosphorus applies from March through October and ammonia from April through September. The WLA do not apply to other periods of the year. In March 1994 the permits were revised to allocate part of the WLA to the City of Henderson.

The City of Henderson was issued an NPDES permit in September 1992 to seasonally discharge up to 9.5 MGD to Las Vegas Wash from November through February. The Board of County Commissioners has approved an amendment to the Clark County 208 Plan which allows the City of Henderson to discharge up to 10 MGD on a year-round basis in addition to the seasonal 9.5 MGD discharge. In order for Henderson to discharge to Las Vegas Wash in the WLA period, permits were amended to adjust the WLA for each entity. A permit was issued to the City of Henderson 7-1-94 with WLA, and other requirements similar to CCSD and the City of Las Vegas. Henderson will continue to use rapid infiltration basins and subsequent re-use. Henderson has an extensive re-use system, which NDEP encourages, including parks, cemeteries, a golf course and a green belt along the Boulder Highway.

The CCSD plans to make direct discharge of part of Laughlin's wastewater effluent into the Colorado River and to make reuse of the remainder on local golf courses. The CCSD estimates that by the year 2000, 7,000 af/y of treated effluent in Laughlin, a rapidly growing resort area located adjacent to the Colorado River, will ultimately be available, 2,000 af/y will be reused, and 5,000 af/y will be returned to the Colorado River for credit. An NPDES permit

has been issued. The quality of the waters affected by this permit will be closely monitored and all necessary programs to protect water quality standards will be implemented.

The Lake Las Vegas Resort, located east of Las Vegas near Lake Mead, is also included in the Clark County 208 Plan. It has applied to the NDEP for an NPDES permit to discharge to the Las Vegas Wash up to 3,000 acre-feet per year from its reservoir on a seasonal basis. Permit approval is expected in 1996.

Nevada is continuing to apply the policies adopted by the Forum.

## Water Quality Management Planning

A Section 208 Water Quality Management Plan for Clark County was approved by the Board of County Commissioners in December 1979 and approved by EPA in October 1981. The plan has been amended on several occasions to address changing water quality needs due to growth in urban and rural areas of the County. The most recent comprehensive rural area amendment was approved in November 1988. The most recent comprehensive update for the Las Vegas Valley was approved by the Board of County Commissioners in June 1990 and approved by EPA in January 1993.

The 1990 urban area amendment updated Las Vegas Valley water quality management practices with respect to wastewater treatment, effluent reuse, water conservation, flood control, storm water permitting, and the Las Vegas Wash. It also evaluated the primary and secondary environmental impacts resulting from the updated strategies and discussed appropriate mitigation measures. The 1990 amendment incorporated a previous 1989 amendment that updated population projections and wastewater flow projections for the designated planning area in Clark County through the year 2010. Other 1990 amendments incorporated facilities plans for the City of Henderson, the City of Mesquite and the unincorporated area of Laughlin.

On January 4, 1993, the Board of County Commissioners approved a 208 amendment to permit year-round discharge of treated effluent to the Las Vegas Wash by the City of Henderson. By mutual agreement between the CCSD, City of Las Vegas, and City of Henderson, and with the approval of the NDEP, the TMDLs were reallocated among the three discharging entities so that the City of Henderson could share in the TMDLs year-round. The three entities have also proposed language changes for their NPDES permits that would allow wasteload trading and sharing between them so long as the sum of the TMDLs are not exceeded.

Expansion of the City of Las Vegas wastewater treatment facilities was completed in accordance with approved 201 facilities plans. Completion of the expansion of the CCSD facility is expected in March 1996. Industrial pre-treatment permits are being required by the CCSD for reverse osmosis treatment of shallow ground water and on-site treated gray water to be used by the Mirage/Treasure Island development in its landscaping and decorative water features. This

represents a new beneficial use of shallow saline ground water that is pumped for dewatering around building foundations. Local government entities within urban Clark County are also participants in the NPDES Storm water Permit Technical Committee to identify and implement measures to meet State storm water permitting requirements. Future 208 amendments are expected to address gray water issues and shallow ground water issues, to update population projections, and to incorporate BMPs identified in the storm water permit for the Las Vegas area entities.

## Facilities Plans

The City of Henderson completed construction of a ten MGD treatment plant in July of 1994. The City has the capability to treat 19.5 MGD of wastewater. The City has been granted a permit to discharge secondary effluent to the Las Vegas Wash during the winter period. Effluent disposal will be accomplished by a combination of subsurface disposal via rapid infiltration basins, irrigation on golf courses, a highway median, other public areas, and by discharge to the Las Vegas Wash. Infiltrated effluent will eventually reach the Las Vegas Wash as a subsurface flow. At some time in the future the City may have to discharge to the Las Vegas Wash year round, in which case, nutrient removal will be required during the non-winter months.

The CCSD has completed construction of advanced secondary treatment facilities with a total treatment capacity of 88 MGD. This capacity is projected to be sufficient until 2003-2004. The advanced secondary treatment plant will provide nitrification to reduce ammonia to required levels. Effluent from the advanced secondary treatment plant will be pumped to the AWT plant for additional treatment which includes the removal of phosphorus.

The capacity of the City of Las Vegas' treatment plant is 66 MGD. The treatment plant provides secondary treatment filtration facilities for phosphorus removal, and nitrification facilities, to reduce the concentration of ammonia. The treatment plant treats the flows of both the Cities of Las Vegas and North Las Vegas. The City of Las Vegas is also in the planning stage for construction of two satellite water reclamation facilities.

## Other Activities

A program has been developed by CCSD, Las Vegas, and North Las Vegas to coordinate, investigate, and encourage the implementation of management practices resulting in reduction of wastewater salinity. The principal emphasis of this program will be directed toward salinity control to meet the requirements of the NPDES permits issued to Clark County, the City of Las Vegas, and Henderson.

## New Mexico

### NPDES Permits

Authority for issuing permits has not been delegated to the state. Currently, the program is being administered by EPA, Region VI, except for facilities located on the Navajo Indian Reservation which are administered by Region IX. EPA is following Forum policy in the administration of the permit program. All new or renewed discharge permits contain language requiring the permittee to adhere to Forum policy regarding salt discharges.

In the Colorado River Basin within the state, the following permits have been issued:

A. Industrial permits: electric power generation (3), coal mines (8), uranium mines (3), sand and gravel operations (3), small domestic sewage treatment plants (4), small process water treatment facility (1), drinking water treatment plant (1), and an underground storage tank clean-up program (1).

B. Municipal discharge permits: major sewage treatment plants (3) minor sewage treatment plants (2), and federal/Indian wastewater facilities (11).

### Water Quality Management Planning

Work elements of the State of New Mexico Water Quality Management Plan (Plan) that are applicable to the Colorado River Basin are sediment control, silviculture and irrigated agriculture. The New Mexico Water Quality Control Commission is responsible for the Plan's adoption in New Mexico. The initial Plan was adopted in two parts in October 1978 and May 1979. The most recent update to the Plan was adopted in 1991. The Plan recognizes the importance of working cooperatively with the Forum.

The Plan covers the entire state except for that portion of the Navajo Reservation lying therein. Planning within the reservation is the responsibility of the Navajo Tribe. Much of the Colorado River Basin in New Mexico is within the reservation.

The Plan encourages the voluntary use of BMPs to control or reduce nonpoint source pollution. The Plan designates the San Juan River Basin in New Mexico as one of the four priority basins for implementation of BMP's for sediment control.

The Plan includes designated management agencies responsible for implementation of the nonpoint source control programs set forth therein. The agencies designated for portions of New Mexico lying within the Colorado River Basin are:

- New Mexico Forestry Division for silviculture;

- New Mexico State Highway Department, New Mexico State Park and Recreation Division, and Jicarilla Apache Tribe for rural road construction and maintenance;

- New Mexico State Land Office and U.S. Bureau of Land Management for sediment control;

- U.S. Forest Service for sediment control, rural road construction and maintenance, and silviculture, and;

- U.S. Bureau of Indian Affairs for sediment control, rural road construction and maintenance, silviculture, and irrigated agriculture.

Another management strategy used to control nonpoint source pollution was developed by the State under Section 319 of the 1987 Amendment to the federal Clean Water Act. This section required each state to develop an assessment of its nonpoint source impacted waters and a management plan for controlling pollution from nonpoint sources. Both the assessment and the management program have been approved by EPA. The goal of the management plan is to develop and implement a program which will reduce human-induced pollutants from nonpoint sources entering surface and ground waters. The New Mexico Nonpoint Source Pollution Management Program has been in effect now for six years. The State is making steady progress in identifying, controlling and abating existing nonpoint source pollution problems and in preventing additional nonpoint source concerns. Several State and federal land management agencies such as the U.S. Forest Service, BLM and the State Land Office are participating in nonpoint source activities.

## Other Activities

The State of New Mexico, through the Colorado River Basin Salinity Control Advisory Council and the New Mexico Water Quality Control Commission, supports the Colorado River Basin salinity control program and is taking all reasonable actions to ensure its implementation. State actions include: (1) support of federal legislation including appropriations to implement the program, (2) inclusion of salinity control measures in the Section 208 plans, (3) dissemination of information on salinity sources and control measures to the water users and the public in the Colorado River Basin area of the state, (4) consultation with industries on potential salinity reduction measures, (5) implementation of Forum policy through existing legal and institutional mechanisms, e.g. NPDES permits, (6) providing matching funds to support the USGS water quality data collection program in the Colorado River Basin portion of the state, and (7) maintaining a continuous water quality planning program whereby new or additional salinity control measures can be addressed. A decrease in funding for item (6) above has caused a reduction in this program since 1986.

# Utah

## NPDES Permits

The Department of Environmental Quality administers the discharge permit program. The State has the responsibility for issuance and compliance for all new permits and permit renewal applications received since July 7, 1987.

A total of 49 discharge permits are in effect for industrial facilities in the Utah portion of the Colorado River Basin. Most of the permits are for facilities with no discharge or discharge of intercepted ground water from mining operations in accordance with Forum policy. Additional storm water permits have been issued for construction activities. There are 19 permits for municipal treatment facilities in the Colorado River Basin of Utah.

## Water Quality Management Planning

Water quality management plans pursuant to section 208 of the Clean Water Act for the Uinta Basin, Southeastern Utah, and Wayne County certified by the State and approved by EPA are in place and portions of these plans have been implemented.

## Other Activities

Utah's Nonpoint Source Management Plan was approved by EPA in December 1989. The plan contains Utah's strategy for the control of nonpoint source pollution in the state. A major element in the plan is the need to define rangeland areas in the Colorado River drainage which are yielding sediment and salinity to the system. In a joint effort, the Utah Department of Agriculture, the Utah Department of Environmental Quality, the Utah Division of Water Resources, Reclamation, BLM, NRCS and the USGS completed the task of delineating these areas in 1992. This project identified watershed projects which may be implemented for salinity control on a cost-effective basis. Utah has relied on USDA ACP funds and Bureau of Reclamation salinity control funding to implements salinity control projects in the Colorado River basin.

Utah operates a low interest loan program which provides funding for soil and water conservation and water quality improvement practices for farms. Utah has committed a substantial amount of funding through this program to irrigation improvement projects which provide salinity reduction from on-farm sources. This program operates under the guidance of the Soil Conservation Commission and local soil conservation districts.

In addition, low interest loans are available to irrigation companies from the Board of Water Resources for the improvement of irrigation transmission and delivery systems. These

improvements increase efficiency and decrease seepage losses thereby contributing less deep percolation water for salt loading to the Colorado River system.

## Wyoming

### NPDES Permits

The Wyoming Department of Environmental Quality, Water Quality Division, administers the NPDES Program. The Forum's "Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program" is utilized to evaluate industrial and municipal discharges. There is only one significant industrial source of salinity in the Green River Basin. PacifiCorp's Naughton Power Plant discharges approximately 20 tons of salt per day to a tributary of the Green River. This permit was issued on the basis that it was not "practicable" to implement the Forum policy of no discharge of salt from industrial sources. This decision was based upon a comparison of the costs of removing salt and downstream benefits associated with eliminating the discharge. The current permit expires October 31, 1997, and will be reevaluated for consistency with Forum policy at that time.

A total of 62 NPDES permits are currently active in the Wyoming portion of the Colorado River Basin. Except for the previously discussed permit, all of these discharges are very small. Eighteen municipal discharge permits serving a total population of 41,000 have been issued. Of this total, 32,000 are in Rock Springs and Green River. The incremental increase in total dissolved solids concentration is 420 mg/L and 400 mg/L, respectively, for Rock Springs and Green River. Of the 16 other municipal discharges, most are in compliance; however, a few exceed the 400 mg/L incremental increase in salinity by a few milligrams per liter. It is not economically feasible to implement a comprehensive municipal salinity control program for these very small salt loads. There are 5 other domestic discharges in the basin. These are all small facilities that do not exceed the 400 mg/L incremental increase. Thirty-nine other industrial dischargers also operate in the basin; all are in compliance with Forum policy.

### Water Quality Management Planning

The Water Quality Management Planning and Nonpoint Source Implementation Programs in Wyoming are under the direction of the Water Quality Division of the Department of Environmental Quality. The Clean Water Report for Southwestern Wyoming addressed water quality in Lincoln, Uinta and Sweetwater Counties. This report was adopted at the local level, certified by the Governor and conditionally approved by the EPA on October 9, 1980. The Governor's certification recognized a salinity control program for the Green River Basin as a major water quality priority. The State strongly supports the current USDA efforts in the Big Sandy River Unit.

The Statewide Water Quality Management Plan establishes an institutional framework under which planning and implementation activities can proceed in Wyoming. Implementation of much of the program depends on the availability of funds and the acceptance of responsibilities by the designated management agencies. The Wyoming Statewide Water Quality Management Plan is amended regularly through adoption of the triennial review and its supplemental report.

The Wyoming Nonpoint Source Management Plan was partially approved by EPA in September 1989. The Plan calls for a cooperative, voluntary approach in the implementation of BMP's targeted at water quality improvements. As with the Statewide Water Quality Management Plan, implementation hinges upon acceptance of responsibilities by designated management agencies and upon the availability of funding under Section 319. Under new guidelines being adopted by EPA in 1996, the State will be updating its Nonpoint Source Management Plan.

## Education and Public Involvement

The Colorado River Basin salinity control problem is basin-wide, with implications which range over the entire 246,000 square mile basin drainage area. The basin's immense size highlights the need for effective public education and public involvement programs due to the physical and cultural diversities which exist across the seven states. Implementation of measures to control complex problems such as salinity requires awareness, concern and involvement, along with recognition that a problem many miles away may have direct impacts. The states individually and in concert as the Forum have and will continue to work with concerned agencies, both state and federal, to increase the public understanding of the salinity problem and its control.

Since irrigation is the principal human-induced source of salinity, a major thrust of the public education/public involvement effort focuses on educating irrigators as to the sources, impacts and methods of controlling salinity, specifically the means to improve irrigation practices so as to reduce the input of salts into the river system. The goal of this effort is to encourage desirable changes in water application technology and management practices. The Basin states work within the framework of ongoing efforts (Water Quality Management Programs, the NRCS, and the Cooperative State Research, Education and Extension Service) to achieve this goal. Assistance from the Executive Director of the Forum is routinely provided. The plan formulation phase of Reclamation, USDA, and BLM salinity control projects provides an excellent opportunity for public education with regard to Colorado River salinity and the means for its control.

Meetings of the Colorado River Basin Salinity Control Forum are open and the public is welcome to attend. All input, whether oral or written, is considered and acted on as appropriate by Forum consensus. The Forum also provides for public involvement in the water quality standards review process in that public meetings are held to receive comments on the salinity standards during each triennial review. As a result of such public input, appropriate changes are made.

As each of the Basin states proceeds with its adoption process, one or more state-wide, public hearings are held. In addition, there is widespread announcement of the Forum and state hearings, and copies of the Review and associated state standards are mailed to interested agencies, groups and individuals.

Forum members participate with their water quality planning agencies in matters related to salinity and salinity control and will continue to do so as the need arises.

## FORUM ACTIVITIES

The Forum meets about twice a year, or as needed, to discuss the salinity control program, the efforts of the federal agencies and the states, and the need for additional policy and/or action by the Forum. During the last triennial review effort, the Forum met on April 28, 1993, in Grand Junction, Colorado and adopted the preliminary Review report for 1993. The Forum then held public meetings during the summer, and after receiving comments, prepared a supplemental report dated October 1993.

During this reporting period, the Forum also met on October 26, 1993, in Phoenix, Arizona; May 19, 1994, in Vernal, Utah; November 2, 1994, in Albuquerque, New Mexico; June 1, 1995 in Jackson, Wyoming; and October 19, 1995, in Lake Havasu City, Arizona. Since the creation of the Forum in November 1973, the Lake Havasu City meeting was the 53rd meeting. The Forum has published a two-volume compilation of all of the minutes of the Forum meetings, one volume from 1973 through 1985, and the other from 1986 through 1991. The Forum held its 54th meeting on June 6, 1996 in Breckenridge, Colorado and authorized the printing of this report for mailing and public meetings. The Forum plans to finally adopt this report at a meeting in the fall of 1996.

A Work Group, created by the Forum, holds meetings on a more frequent basis to review technical information which is generated by the federal agencies. Membership on the Work Group is composed of technical representatives from each of the seven Basin states. Federal agency representatives, however, attend meetings of the Work Group and informally exchange information, ideas and viewpoints. The Work Group coordinates the efforts of the seven Basin states and reports back to the Forum any actions which the Work Group believes the Forum should consider.

Positions have been taken on many issues, such as the need for appropriation of funds by the Congress. Federal agencies have also prepared numerous reports in the three-year period. The Forum has compiled a library of many reports relating to Colorado River salinity. The Work Group and the Forum have had opportunity to review and comment on these reports in draft form. Notable among the reports prepared since the last triennial review is a report which is prepared by the Bureau of Reclamation and submitted to Congress every two years. The last of these

publications is Quality of Water, Colorado River Basin, Progress Report No. 17, January 1995, U.S. Department of the Interior. Also published since the 1993 Review was prepared was the 1993 Report to Congress, Colorado River Basin Salinity Control Program, USDA, August 5, 1993. In addition, the Forum and the Work Group have, over the last three years, assisted the Colorado River Basin Salinity Control Advisory Council in the preparation of three annual reports.

# CHAPTER 6 - MEANS OF MAKING PLAN OPERATIONAL

## Introduction

The Forum has as its objective the overall coordination and implementation of projects, and the continuing review of salinity changes and program effectiveness. At least every three years, the Forum considers existing and projected water depletions and salt concentrations and, as needed and feasible, recommends revisions in the schedule for implementing salinity control measures and/or modifications of the numeric criteria. The review includes both federal and non-federal programs. The review's resulting report is transmitted to the EPA and state water resources and pollution control agencies and is made available to others interested in the salinity control program. A key conclusion of this report is included in the "Standards Review Procedures" section wherein the Basin states find that the present numeric criteria are appropriate and no change in them is recommended.

The means of making the Plan operational consists of having coordinated planning reports for additional salt removal prepared and appropriations for carrying out those plans. Accomplishment of the Program is dependent upon funding of the projects included in the Plan of Implementation - which is dependent upon agency budgetary requests being made, Congressional appropriations being secured and on the ground irrigation modifications and other salt loading reduction practices being put into place.

## Program Development and Implementation

As explained in Chapter 3, several significant legislative changes concerning the Salinity Control Program have occurred since the adoption of the 1993 Triennial Review by the Colorado River Basin Salinity Control Forum. These changes have affected both the Bureau of Reclamation and the Department of Agriculture's salinity control programs.

### USBR Program

The 1995 Amendments to the Act (P.L. 104-20) required that a planning report be submitted by the Secretary to the appropriate committees of Congress regarding the new program. A copy of S. 523, the legislative document approved by the Senate and the House and signed by the President, and P.L. 104-20, the resulting public law, is included in Appendix E. The required report, entitled: Report to Congress on the Bureau of Reclamation Basinwide Program, dated February, 1996 was submitted to the Congress. Congress did not comment on the report, therefore Reclamation is proceeding with its program under the new authority.

## USDA Program

The Federal Agriculture Improvement and Reform Act of 1996 (P.L. 104-127) incorporated salinity control efforts into the new Environmental Quality Incentives Program (EQIP). This was done by removing all of the Department of Agriculture authorities for salinity control in the Colorado River Basin Salinity Control Act except for restated cost sharing authoritites with the Basin states, and in Section 334 of P.L. 104-127 new salinity control authority was given. A small relevant portion of the lengthy P.L. 104-127 is included in Appendix E. Several of the Program changes could significantly affect the implementation of the USDA's on-farm program. For example, the limitations on cost-share payments could impact voluntary participation in the salinity control program where capital-intensive salinity reduction practices are needed. Additionally it is critical to achieving salt reduction goals that the Secretary designate salinity control in the Colorado River Basin as a conservation priority area under EQIP.

## BLM Program

On October 30, 1984, amendments to the Colorado River Basin Salinity Control Act modified sections of P.L. 93-320. The amendments required the BLM to develop a comprehensive salinity control program.

The BLM relies upon several other key authorities (i.e. legislation, executive orders, etc.) as the basis for salinity control, water quality management, and range improvement activities. These are:

1. The Federal Land Policy and Management Act of 1976;

2. The Clean Water Act, as amended by the Water Quality Act of 1987;

3. Presidential Executive Order No. 12088 (October 17, 1978) regarding federal compliance with Pollution Control Standards; and

4. The Public Rangelands Improvement Act of 1978.

In recognition of BLM's objectives of point source control, and retaining salt and sediment onsite that are arising from non-point sources, there are considerable opportunities to reduce salt loading to the Colorado River system from lands and activities managed by the BLM . Because of the cost-effective nature of the BLM program, their salinity control effort needs to expand. Critical to such an expanded effort is for BLM to analyze salt loading and to identify salinity control opportunities in all applicable land use and activity and in applicable environmental compliance documents. Headquarters direction should be issued to the BLM Basin State Directors to ensure that the above analysis and identification occurs.

Additional efforts are required of the BLM to identify, quantify, and reduce salt loading in its field operations. This Review has identified that approximately 90,000 tons of BLM salt loading reduction is required by 2015 to meet the salinity standards. The BLM should continue to seek

the most cost-effective salinity control measures in order to meet its obligations for salt load reduction.

## USGS Program

The USGS streamflow gaging and water quality sampling activities and the long-standing periods of record at existing stations are essential to the monitoring and evaluation of salinity control effectiveness. USGS should continue to seek funding under its existing authority for flow gaging and water quality stations in order to provide necessary data for the evaluation of the short-term and long-term effectiveness of the Colorado River Basin Salinity Control Program.

## Financing Salinity Control Activities

In enacting P.L. 93-320, Congress recognized the federal role and responsibility for controlling the salinity of the Colorado River and adopted a cost-sharing formula which provides that 75 percent of the costs of the four Department of the Interior salinity control projects authorized by Title II of the Act are nonreimbursable. The remaining 25 percent of the costs are to be repaid from the Upper and Lower Basin funds over a 50-year period without interest. The maximum allocation to the Upper Basin fund is not to exceed 15 percent of the total costs to be repaid from the two funds with the remainder to be repaid by the Lower Basin fund.

The 1984 amendments to P.L. 93-320 changed the cost-sharing formula. For the Department of the Interior program, the non-reimbursable portion was reduced to 70 percent, with the remaining 30 percent to come from Upper and Lower Basin funds in the same proportionate share as under P.L. 93-320. However, the Upper Basin fund could repay its share over 50 years with interest, and the Lower Basin could reimburse its share of the annual expenditure during the year that costs are incurred.

The USDA salinity control program as amended in 1996, requires at least a 25 percent non-federal cost share for participation. In addition, the legislation allows for the Basin Funds to cost share up to 30 percent. Money is available in the Basin Funds for this purpose.

Table 6-1 provides a compilation of the amount of funding provided to the Bureau of Reclamation, the Department of Agriculture and the Bureau of Land Management (BLM) for the Colorado River Basin Salinity Control Program from Fiscal Year 1988 to the present. Funding levels for salinity control activities by the BLM continue to be difficult to ascertain due to the fact that the BLM budget does not contain a specific line item for salinity control.

While the USDA program has proved to be one of the most cost-effective components of the basin-wide salinity control program, the Administration's and Congressional funding support for the Program has dramatically declined. Table 6-1 reflects the significant reduction in USDA appropriations between 1994 through 1996. Funding at the 1995-1996 levels jeopardizes the ability of the Plan of Implementation to be implemented in a manner that assures compliance with the numeric criteria.

The 1984 Amendments to the Act (P.L. 98-569) provide that Reclamation is authorized to reimburse the costs of operation and maintenance expenses in excess of those that would have occurred for the thorough and timely operation and maintenance of the unimproved system. Those Amendments also allow the federal government to pay for replacement costs of the facilities and the costs of operation and maintenance of works to replace impacted fish and wildlife values.

The 1995 Amendments to the Act (P.L. 104-20) did not change the cost-sharing and repayment relationships among the states or the federal government, but it does provide additional flexibility to Reclamation if the proposed project has other associated indirect benefits of federal interest, i.e., other water quality or environmental benefits. The cost of this assistance will not be considered a project cost however.

Revenues accruing to the lower Basin fund for the salinity control program are derived from a 2½ mill levy on hydropower generation in the lower Basin. The Plan of Implementation as presented earlier in this Review incorporates a construction schedule that, when completed, will have a total estimated cost of $661 million. Under this Plan, the required salinity reduction can be made throughout the planning period (2015), and the lower Basin fund will be adequate to meet its obligation of repayment.

**Table 6-1**
**Summary of Colorado River Basin Salinity Control Program**
**Funding For the Bureau of Reclamation,**
**the Department of Agriculture and the Bureau of Land Management**
**By Federal Fiscal Year Since 1988**
(In Dollars)

| Federal Fiscal Year | Bureau of Reclamation | Department of Agriculture | Bureau of Land Management |
|---|---|---|---|
| 1988 | 20,783,000 | 3,804,000 | 500,000 |
| 1989 | 16,798,000 | 5,452,000 | 500,000 |
| 1990 | 14,185,000 | 10,341,000 | 700,000 |
| 1991 | 24,984,000 | 14,783,000 | 873,000 |
| 1992 | 34,566,000 | 14,783,000 | 873,000 |
| 1993 | 33,817,000 | 13,783,000 | 866,000 |
| 1994 | 32,962,000 | 13,783,000 | 800,000 |
| 1995 | 12,540,000 | 4,500,000 | 800,000 |
| 1996 | 8,205,000 | 2,681,000 | To Be Determined |

Two potential sources of funding to assist salinity control efforts exist under the Clean Water Act. Through Fiscal Year 1993, Congressional appropriations for Section 319 nonpoint source control funds are nearly $190 million. Section 319 funds are available for implementing

state-adopted EPA-approved nonpoint source management programs. The construction grant program has now essentially been replaced by the State Revolving Fund (SRF) program, which provides low interest loans for pollution control projects. Under Section 603(c)(2), the SRF program can be used to fund implementation of Section 319 projects.

The Basin states each year urge Congress to appropriate the funds necessary to implement the federal portion of the Plan of Implementation. The Basin states recognize the need to redouble their efforts to respectfully urge Senators and Representatives from the Basin states, and those in key positions on the appropriation committees and subcommittees, to provide the funds necessary for the effective implementation of the program.

## Responsibility for Accomplishing Salinity Control Measures

The Plan of Implementation recognizes that the Forum, participating federal agencies and the Basin states each have specific responsibilities for furthering the salinity control program. The elements of the Plan of Implementation are premised on completion of all of the salinity control measures discussed in Chapters 4 and 5 of this report. Specifically, the Forum will continue to provide overall coordination, a continuing review of salinity changes, program effectiveness and the need to make further program changes and improvements. At least every three years, the Forum will consider existing depletions and salt concentrations and, when needed and feasible, recommend revisions in the schedule for implementing salinity control measures and/or modifications of the numeric criteria. The review will include both federal and non-federal programs. This Review is transmitted to the EPA and to state water resources and pollution control agencies and will be made available to others interested in the salinity control program.

Appropriate federal agencies will complete planning reports and seek authorization and funding for salinity control projects in accordance with Title II of P.L. 93-320, P.L. 98-569 and P.L. 104-20. The Basin states will continue to encourage the agencies to request funding and to lend their support in obtaining needed authorization and funding from the Congress.

## Standards Review Procedures

Prior to state action on the review of the numeric criteria and plan of implementation, public review and discussion will be sought through public meetings. The Forum will hold two regional meetings in the basin to describe the basin-wide nature of the salinity problem, the ongoing control program and the Plan of Implementation as recommended in this report, and to solicit comments and views from interested agencies, groups and individuals.

In accordance with provisions of the Clean Water Act, each of the Basin states will consider the Forum's Review. No change has been made in the numeric criteria since their adoption in 1975 by the Basin states and approval by EPA. After having conducted this Review, the Basin states again find the numeric criteria to be appropriate and recommend no changes in the criteria. Adoption will be accomplished according to the required procedures of each state and the Water Quality Standards Regulation (40 CFR Part 131).

# CHAPTER 7 - PROVISION FOR REVIEWING AND REVISING STANDARDS

The Forum, in its statement of "Principles and Assumptions for Development of Colorado River Salinity Standards and Implementation Plan," approved by the Forum on September 20, 1974, stated under Principle 7:

> *The plan of implementation shall be reviewed and modified as appropriate from time to time, but at least once each 3 years. At the same time, the (numeric) standards, as required by Section 303(c) (l) of P.L. 92-500 shall be reviewed for the purpose of modifying and adopting standards consistent with the plan so that the Basin states may continue to develop their compact-apportioned waters while providing the best practicable water quality in the Colorado River Basin.*

The Forum took this position because the Colorado River Basin is a large and complex area with many problems. A wide range of research, technical studies and actions are underway and much knowledge is yet to be gained. Procedures for reducing the volume of saline irrigation return flows have been developed and the USDA is aggressively implementing, within available funding, a voluntary cost-sharing program with individual farmers, irrigation districts and canal companies to improve on-farm water management practices and local water delivery systems.

The Forum's Work Group keeps current with salinity control efforts and suggests revisions as appropriate. The Work Group operates under a schedule which enables the states to take action on any potential revision by the required revision date.

# APPENDIX A

**EPA Regulation 40 CFR, Part 120**

Title 40—Protection of Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

[FRL 298-6]

PART 120—WATER QUALITY STANDARDS

Colorado River System; Salinity Control Policy and Standards Procedures

The purpose of this notice is to amend 40 CFR Part 120 to set forth a salinity control policy and procedures and requirements for establishing water quality standards for salinity and a plan of implementation for salinity control in the Colorado River System which lies within the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming pursuant to section 303 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1313). A notice proposing such policy and standards procedures was issued on June 10, 1974 (39 FR 20703, 39 FR 34517).

High salinity (total dissolved solids) is recognized as a significant water quality problem causing adverse impacts on water uses. Salinity concentrations are affected by two basic processes: (a) Salt loading—the addition of mineral salts from various natural and man-made sources, and (b) salt concentrating—the loss of water from the system through stream depletion.

Studies to date have demonstrated that the high salinity of stream systems can be alleviated. Although further study may be required to determine the economic and technical feasibility of controlling specific sources, sufficient information is available to develop a salinity control program.

Salinity standards for the Colorado River System would be useful in the formulation of an effective salinity control program. In developing these standards, the seven States must cooperate with one another and the Federal Government to support and implement the conclusions and recommendations adopted April 27, 1972, by the reconvened 7th Session of the Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and its Tributaries.

Public hearings on the proposed regulation were held in Las Vegas, Nevada, on August 19, 1974, and in Denver, Colorado, on August 21, 1974. Public comments were provided at the hearings and also by letter during the review period. A summary of major comments and Environmental Protection Agency response follows:

(1) The Colorado River Basin Salinity Control Forum stated that it did not object to the proposed regulation, and believed that it satisfied the requirements of section 303(b)(2) of P.L. 92-500 until October 18, 1975. The Forum reported that the seven Colorado River Basin States were actively working on the development of water quality standards and a plan of implementation for salinity control.

(2) The Colorado River Water Conservation District inquired as to whether the definition of the Colorado River Basin contained in Article II(f) of the Colorado River Compact of 1922 would be followed in the development of salinity standards and the salinity control plan.

The requirement for establishing water quality standards and an implementation plan apply to the Colorado River System as defined in Part 120.5(a) of this regulation. This definition is consistent with the definition of the Colorado River System contained in Article II(a) of the Compact. The regulation states that the salinity problem shall be treated as a basinwide problem. Articles II(f) and II(g) define the Basin to include the System plus areas outside the drainage area which are served by the Colorado River System. The Environmental Protection Agency (EPA) will require that the standards and implementation plan consider the impacts of basinwide uses, e.g., transmountain diversions, on salinity effects in the System, but the establishment of standards and implementation plans pursuant to this regulation will not be required for streams located outside the System.

The District also questioned the feasibility of relying on irrigation improvement programs as a means of alleviating the salinity problem.

EPA believes that adequate information is available to initiate controls for irrigated agriculture, yet at the same time acknowledges that additional work is needed to demonstrate the efficacy of certain control measures. Projects presently being supported by EPA and others should demonstrate the adequacy of various control measures including management and non-structural techniques. These measures will be considered during the development of the implementation plan.

(3) The Environmental Defense Fund (EDF) testified that it believed that EPA was not complying with the requirements of the Federal Water Pollution Control Act, as amended, chiefly because of EPA's late response to the timetable delineated in the Act for establishing standards, and also because numerical standards still have not been set for the Colorado River System. EDF called upon EPA to withdraw the proposed regulation and promptly promulgate numerical limits for salinity.

EPA believes that a move to promulgate numerical standards at this time could cause ever further delays in controlling salinity due to the problems involved with obtaining interstate cooperation and public acceptance of such a promulgation.

(4) The Sierra Club raised a number of objections to the proposed regulation, principally because, in its opinion, it permits further development of the waters of the Colorado River without requiring that adequate salinity controls be on line prior to development. Specific suggestions are:

(a) Section 120.5(e)(3). Shorten the deadline for submission of the standards and implementation plan to May 30, 1975.

EPA believes that this would not allow adequate time due to the complexities of the problem, the interstate coordination needed and the time requirements for public hearings. The October 18, 1975, date is consistent with the requirements of the Federal Water Pollution Control Act, as amended, for the three year review and revision of standards. The schedule set forth by the Colorado River Basin Salinity Control Forum calls for development of draft standards and an implementation plan by February 1975 in order to allow time for public participation prior to promulgation.

(b) Section 120.5(e)(2). Delete "as expeditiously as practicable."

The date of July 1, 1983, remains the goal for accomplishment of implementation plans as stated in § 120.5(e)(2)(iii). It is the purpose of this language to accelerate progress by the States toward this goal where possible.

(c) Section 120.5(e)(2)(ii). Delete "while the basin States continue to develop their compact apportioned waters."

In recognition of the provisions of the Colorado River Compact of 1922 and until such time that the relationship between the Compact and the Federal Water Pollution Control Act, as amended, is clarified, EPA believes that development may proceed provided that measures are taken to offset the salinity increases resulting from further development.

(d) Section 120.5(c)(2)(iv). Add language to describe conditions under which temporary increases above the 1972 levels will be allowed.

EPA believes that this matter should be addressed in further detail in the formulation, review and acceptance of the implementation plan, not in the regulation.

(e) Add a new subsection on financing of control measures.

EPA believes that this, too, is an issue that should be handled as part of the implementation plan.

(f) Add a new subsection delineating requirements for evaluating control plans and restricting consideration of controls for the Blue Spring on the Little Colorado River.

EPA believes these issues should also be addressed as part of the implementation plan. It should be noted that nothing in this regulation removes the requirement for assessing environmental impacts and preparing environmental impact statements for control measures.

(g) Add a new section requiring public hearings.

EPA's public participation regulations appear at 40 CFR 105 and apply to all actions to be taken by the States and Federal Government pursuant to the Act. States have provided for public participation throughout the initial water quality standards review process. We expect the States to do so in this situation and see no need to set forth additional requirements.

(h) Add a new section stating that the implementation plan will be published in the FEDERAL REGISTER.

EPA expects there will be substantial public participation at the State and local level prior to adoption of the plan. The salinity standards are expected to be published in the FEDERAL REGISTER, but the size and complexity of the plan may militate against its publication. At the very least, the plan will be available for review at appropriate EPA and State offices. Notice of its availability will be published in the FEDERAL REGISTER, and 60 days will be allowed for public review and comment.

(i) Add a new subsection stating that EPA will promulgate standards if the States fail to do so as prescribed in this regulation.

Section 303 of the Federal Water Pollution Control Act provides for promulgation by EPA where the States fail to adopt standards requested by the Administrator, or where the Administrator determines Federal promulgation is necessary to carry out the purposes of the Act. EPA's responsibility to promulgate standards if the States fail to do so is thus expressed in the statute itself; the Agency does not believe that recitation of the statutory duty in this particular rulemaking is necessary.

(5) The American Farm Bureau Federation, California Farm Bureau Federation, Nevada Farm Bureau Federation, and the New Mexico Farm and Livestock Bureau believe that standards should not be set until further evaluation of the problems and opportunities for control are completed.

EPA believes that adequate information is available for setting standards and formulating controls, and while it recognizes that additional work is needed on specific aspects of solutions, it believes that further delay without any action is not appropriate.

Records of the hearings and comments received by letter during the review period are available for public inspection at the regional offices of the Environmental Protection Agency at 1860 Lincoln Street in Denver, Colorado, at 100 California Street in San Francisco, California, at 1600 Patterson Street in Dallas, Texas, and at the Environmental Protection Agency Freedom of Information Center at 401 M Street SW in Washington, D.C.

This regulation sets forth a policy of maintaining salinity concentrations in the lower main stem of the Colorado River at or below 1972 average levels and requires the Colorado River System States to promulgate water quality standards and a plan for meeting the standards. The first step will be the establishment of procedures within 30 days of the effective date of these regulations which will lead to adoption on or before October 18, 1975, of water quality standards for salinity including numeric criteria and an implementation plan for salinity control.

Except as provided in this regulation, the interstate and intrastate standards previously adopted by the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming and approved by the Environmental Protection

Agency are the effective water quality standards under section 303 of the Act for interstate and intrastate waters within those States. Where the regulations set forth below are inconsistent with the referenced state standards, these regulations will supersede such standards to the extent of the inconsistency.

In consideration of the foregoing, 40 CFR Part 120 is amended as follows:

1. Section 120.5 is added to read as set forth below:

§ 120.5 Colorado River System Salinity Standards and Implementation Plan.

(a) "Colorado River System" means that portion of the Colorado River and its tributaries within the United States of America.

(b) It shall be the policy that the flow weighted average annual salinity in the lower main stem of the Colorado River System be maintained at or below the average value found during 1972. To carry out this policy, water quality standards for salinity and a plan of implementation for salinity control shall be developed and implemented in accordance with the principles of paragraph (c) below.

(c) The States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming are required to adopt and submit for approval to the Environmental Protection Agency on or before October 18, 1975:

(1) Adopted water quality standards for salinity including numeric criteria consistent with the policy stated above for appropriate points in the Colorado River System; and,

(2) A plan to achieve compliance with these standards as expeditiously as practicable providing that:

(i) The plan shall identify State and Federal regulatory authorities and programs necessary to achieve compliance with the plan.

(ii) The salinity problem shall be treated as a basinwide problem that needs to be solved in order to maintain lower main stem salinity at or below 1972 levels while the basin States continue to develop their compact apportioned waters.

(iii) The goal of the plan shall be to achieve compliance with the adopted standards by July 1, 1983. The date of compliance with the adopted standards shall take into account the necessity for Federal salinity control actions set forth in the plan. Abatement measures within the control of the States shall be implemented as soon as practicable.

(iv) Salinity levels in the lower main stem may temporarily increase above the 1972 levels if control measures to offset the increases are included in the control plan. However, compliance with 1972 levels shall be a primary consideration.

(v) The feasibility of establishing an interstate institution for salinity management shall be evaluated.

(d) The States are required to submit to the respective Environmental Protection Agency Regional Administrator established procedures for achieving (c) (1) and (c) (2) above within 30 days of the effective date of these regulations and to submit progress reports quarterly thereafter. EPA will on a quarterly basis determine the progress being made in the development of salinity standards and the implementation plan.

§ 120.10 [Amended]

§ 120.10 is amended by adding to the paragraphs entitled "Arizona", "California", "Colorado", "Nevada", "New Mexico", "Utah", and "Wyoming" a salinity control policy and procedures and requirements for establishing water quality standards for salinity control in the Colorado River System.

(Sec. 303, Pub. L. 92-500, 86 Stat. 816 (33 U.S.C. 1313))

Effective date: December 18, 1974.

Dated: December 11, 1974.

# APPENDIX B

## Forum Policies

**POLICY**
**FOR IMPLEMENTATION OF**
**COLORADO RIVER SALINITY STANDARDS**
**THROUGH THE NPDES PERMIT PROGRAM**

Prepared by
The Colorado River Basin Salinity Control Forum

February 28, 1977

In November 1976, the United States Environmental Protection Agency Regional Administrators notified each of the seven Colorado River Basin states of the approval of the water quality standards for salinity for the Colorado River System as contained in the document entitled "Proposed Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control, Colorado River System, June 1975," and the supplement dated August 25, 1975. The salinity standards including numeric criteria and a plan of implementation provide for a flow weighted average annual numeric criteria for three stations in the lower main stem of the Colorado River: below Hoover Dam, below Parker Dam, and at Imperial Dam.

The Plan of Implementation is comprised of a number of Federal and non-Federal projects and measures to maintain the flow-weighted average annual salinity in the Lower Colorado River at or below numeric criteria at the three stations as the Upper and Lower Basin states continue to develop their compact-apportioned waters. One of the components of the Plan consists of the placing of effluent limitations, through the National Pollutant Discharge Elimination System (NPDES) permit program, on industrial and municipal discharges.

The purpose of this policy is to provide more detailed guidance in the application of salinity standards developed pursuant to Section 303 and through the NPDES permitting authority in the regulation of municipal and industrial sources. (See Section 402 of the Federal Water Pollution Control Act.) This policy is applicable to discharges that would have an impact, either direct or indirect on the lower main stem of the Colorado River System. The lower main stem is defined as that portion of the main river from Hoover Dam to Imperial Dam.

## I. Industrial Sources

The Salinity Standards state that "the objective for discharges shall be a no-salt return policy whenever practicable." This is the policy that shall be followed in issuing NPDES discharge permits for all new industrial sources, and upon the reissuance of permits for all existing industrial sources, except as provided herein. The following

addresses those cases where no-discharge of salt may be deemed not to be practicable.

A. New Construction

1. New construction is defined as any facility from which a discharge may occur, the construction of which is commenced after October 18, 1975. (Date of submittal of water quality standards as required by 40 CFR 120, December 11, 1974.) Appendix A provides guidance on new construction determination.

   a. The permitting authority may permit the discharge of salt upon a satisfactory demonstration by the permittee that it is not practicable to prevent the discharge of all salt from proposed new construction.

   b. The demonstration by the applicant must include information on the following factors relating to the potential discharge:

      (1) Description of the proposed new construction.

      (2) Description of the quantity and salinity of the water supply.

      (3) Description of water rights, including diversions and consumptive use quantities.

      (4) Alternative plans that could reduce or eliminate salt discharge. Alternative plans shall include:

         (a) Description of alternative water supplies, including provisions of water reuse, if any.

         (b) Description of quantity and quality of proposed discharge.

         (c) Description of how salts removed from discharges shall be disposed of to prevent such salts from entering surface waters or groundwater aquifers.

         (d) Costs of alternative plans in dollars per ton of salt removed.

(5) Of the alternatives, a statement as to the one plan for reduction of salt discharge that the applicant recommends be adopted.

(6) Such other information pertinent to demonstration of non-practicability as the permitting authority may deem necessary.

c. In determining what permit conditions shall be required, the permit issuing authority shall consider, but not be limited to the following:

(1) The practicability of achieving no discharge of salt.

(2) Where no discharge is determined not to be practicable:

(a) The impact of the total proposed salt discharge of each alternative on the lower main stem in terms of both tons per year and concentration.

(b) Costs per ton of salt removed from the discharge for each plan alternative.

(c) Capability of minimizing salinity discharge.

(3) With regard to both points, one and two above, the compatibility of state water laws with either the complete elimination of a salt discharge or any plan for minimizing a salt discharge.

(4) The no-salt discharge requirement may be waived in those cases where the salt load reaching the main stem of the Colorado River is less than one ton per day or 350 tons per year, whichever is less. Evaluation will be made on a case-by-case basis.

B. Existing Facilities

1. The permitting authority may permit the discharge of salt upon a satisfactory demonstration by the permittee that it is not practicable to prevent the discharge of all salt from an existing facility.

2. The demonstration by the applicant must include, in addition to that required under Section I,A,1,b; the following factors relating to the potential discharge:

   a. Existing tonnage of salt discharged and volume of effluent.

   b. Cost of modifying existing industrial plant to provide for no salt discharge.

   c. Cost of salt minimization.

3. In determining what permit conditions shall be required, the permit issuing authority shall consider the items presented under I,A,1,c (2), and in addition; the annual costs of plant modification in terms of dollars per ton of salt removed for:

   a. No salt return.

   b. Minimizing salt return.

4. The no-salt discharge requirement may be waived in those cases where the salt load reaching the main stem of the Colorado River is less than one ton per day or 350 tons per year, whichever is less. Evaluation will be made on a case-by-case basis.

II. Municipal Discharges

The basic policy is that a reasonable increase in salinity shall be established for municipal discharges to any portion of the Colorado River stream system that has an impact on the lower main stem. The incremental increase in salinity shall be 400 mg/l or less, which is considered to be a reasonable incremental increase above the flow weighted average salinity of the intake water supply.

A. The permitting authority may permit a discharge in excess of the 400 mg/l incremental increase at the time of issuance or reissuance of a NPDES discharge permit, upon satisfactory demonstration by the permittee that it is not practicable to attain the 400 mg/l limit.

B. Demonstration by the applicant must include information on the following factors relating to the potential discharge:

   1. Description of the municipal entity and facilities.

   2. Description of the quantity and salinity of intake water sources.

3. Description of significant salt sources of the municipal wastewater collection system, and identification of entities responsible for each source, if available.
4. Description of water rights, including diversions and consumptive use quantities.

5. Description of the wastewater discharge, covering location, receiving waters, quantity, salt load, and salinity.

6. Alternative plans for minimizing salt contribution from the municipal discharge. Alternative plans should include:

   a. Description of system salt sources and alternative means of control.

   b. Cost of alternative plans in dollars per ton, of salt removed from discharge.

7. Such other information pertinent to demonstration of non-practicability as the permitting authority may deem necessary.

C. In determining what permit conditions shall be required, the permit issuing authority shall consider the following criteria including, but not limited to:

1. The practicability of achieving the 400 mg/l incremental increase.

2. Where the 400 mg/l incremental increase is not determined to be practicable:

   a. The impact of the proposed salt input of each alternative on the lower main stem in terms of tons per year and concentration.

   b. Costs per ton of salt removed from discharge of each alternative plan.

   c. Capability of minimizing the salt discharge.

D. If, in the opinion of the permitting authority, the data base for the municipal waste discharger is inadequate, the permit will contain the requirement that the municipal waste discharger monitor the water supply and the wastewater discharge for salinity. Such monitoring program shall be completed within 2 years and the discharger shall then present the information as specified above.

E. Requirements for establishing incremental increases may be waived in those cases where the incremental salt load reaching the main stem of the Colorado River is less than one ton per day or 350 tons per year, whichever is less. Evaluation will be made on a case-by-case basis.

F. All new and reissued NPDES permits for all municipalities shall require monitoring of the salinity of the intake water supply and the wastewater treatment plant effluent in accordance with the following guidelines:

| Treatment Plant Design Capacity | Monitoring Frequency | Type of Sample |
|---|---|---|
| <1.0 MGD* | Quarterly | Discrete |
| 1.0 - 5.0 MGD | Monthly | Composite |
| >5.0 - 50.0 MGD | Weekly | Composite |
| 50.0 MGD | Daily | Composite |

1. Analysis for salinity may be either as total dissolved solids (TDS) or be electrical conductivity where a satisfactory correlation with TDS has been established. The correlation should be based on a minimum of five different samples.

2. Monitoring of the intake water supply may be at a reduced frequency where the salinity of the water supply is relatively uniform.

## APPENDIX A

### Guidance on New Construction Determination

For purposes of determining a new construction, a source should be considered new if by October 18, 1975, there has not been:

I. Significant site preparation work such as major clearing or excavation; and/or

II. Placement, assembly or installation of unique facilities or equipment at the premises where such facilities or equipment will be used; and/or

III. Any contractual obligation to purchase unique facilities or equipment. Facilities and equipment shall include only the major items listed below, provided that the value of such items represents a substantial commitment to construct the facility:

   A. structures; or
   B. structural materials; or
   C. machinery; or
   D. process equipment; or
   E. construction equipment.

IV. Contractual obligation with a firm to design, engineer, and erect a completed facility (i.e., a turnkey plant).

**POLICY**
**FOR USE OF**
**BRACKISH AND/OR SALINE WATERS**
**FOR INDUSTRIAL PURPOSES**

Adopted by
The Colorado River Basin Salinity Control Forum

September 11, 1980

The states of the Colorado River Basin, the federal Executive Department, and the Congress have all adopted as a policy that the salinity in the lower main stem of the Colorado River shall be maintained at or below the flow-weighted average values found during 1972, while the Basin states continue to develop their compact-apportioned waters. In order to achieve this policy, all steps which are practical and within the framework of the administration of states' water rights must be taken to reduce the salt load of the river. One such step was the adoption in 1975 by the Forum of a policy regarding effluent limitations for industrial discharges with the objective of "no-salt return" wherever practicable. Another step was the Forum's adoption in 1977 of the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." These policies are part of the basinwide plan of implementation for salinity control which has been adopted by the seven Basin states.

The Forum finds that the objective of maintaining 1972 salinity levels would be served by the exercise of all feasible measures including, wherever practicable, the use of brackish and/or saline waters for industrial purposes.

The summary and page 32 of the Forum's 1978 Revision of the Water Quality Standards for Salinity state: "The plan also contemplates the use of saline water for industrial purposes whenever practicable,..." In order to implement this concept and thereby further extend the Forum's basic salinity policies, the Colorado River Basin states support the Water and Power Resources Service (WPRS) appraisal study of saline water collection, pretreatment and potential industrial use.

The Colorado River Basin contains large energy resources which are in the early stages of development. The WPRS study should investigate the technical and financial feasibility of serving a significant portion of the water requirements of the energy industry and any other industries by the use of Basin brackish and/or saline waters. The Forum recommends that:

I. The Colorado River Basin states, working with federal agencies, identify, locate and quantify such brackish and/or saline water sources.

II. Information on the availability of these waters be made available to all potential users.

III. Each state encourage and promote the use of such brackish and/or saline waters, except where it would not be environmentally sound or economically feasible, or would significantly increase consumptive use of Colorado River System water in the state above that which would otherwise occur.

IV. The WPRS, with the assistance of the states, encourages and promotes the use of brackish return flows from federal irrigation projects in lieu of fresh water sources, except where it would not be environmentally sound or economically feasible, or would significantly increase consumptive use of Colorado River System water.

V. The WPRS considers a federal contribution to the costs of industrial use of brackish and/or saline water, where cost-effective, as a joint private-government salinity control measure. Such activities shall not delay the implementation of the salinity control projects identified in Title II of P.L. 93-320.

**POLICY**
**FOR IMPLEMENTATION OF**
**COLORADO RIVER SALINITY STANDARDS**
**THROUGH THE NPDES PERMIT PROGRAM**
**FOR INTERCEPTED GROUND WATER**

Adopted by
The Colorado River Basin Salinity Control Forum

October 20, 1982

The States of the Colorado River Basin in 1977 agreed to the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program" with the objective for industrial discharge being "no-salt return" whenever practicable. That policy required the submittal of information by the applicant on alternatives, water rights, quantity, quality, and costs to eliminate or minimize the salt discharge. The information is for use by the NPDES permit-issuing agency in evaluating the practicability of achieving "no-salt" discharge.

There are mines and wells in the Basin which discharge intercepted ground waters.* The factors involved in those situations differ somewhat from those encountered in other industrial discharges. Continued development will undoubtedly result in additional instances in which permit conditions must deal with intercepted ground water.

The discharge of intercepted ground water needs to be evaluated in a manner consistent with the overall objective of "no-salt return" whenever practical. The following provides more detailed guidance for those situations where ground waters are intercepted with resultant changes in ground-water flow regime.

I. The "no-salt" discharge requirement may be waived at the option of the permitting authority in those cases where the discharged salt load reaching the main stem of the Colorado River is less than one ton per day or 350 tons per year whichever is less. Evaluation will be made on a case-by-case basis.

II. Consideration should be given to the possibility that the ground water, if not intercepted, normally would reach the Colorado River System in a reasonable time frame. An industry desiring such consideration must provide detailed information

---

*The term "intercepted ground water" means all ground water encountered during mining or other industrial operations.

including a description of the topography, geology, and hydrology. Such information must include direction and rate of ground-water flow; chemical quality and quantity of ground water; and the location, quality, and quantity of surface streams and springs that might be affected. If the information adequately demonstrates that the ground water to be intercepted normally would reach the river system in a reasonable time frame and would contain approximately the same or greater salt load than if intercepted, and if no significant localized problems would be created, then the permitting agency may waive the "no-salt" discharge requirement.

III. In those situations where the discharge does not meet the criteria in I or II above, the applicant will be required to submit the following information for consideration:

A. Description of the topography, geology, and hydrology. Such information must include the location of the development, direction and rate of ground-water flow, chemical quality and quantity of ground water, and relevant data on surface streams and springs that are or might be affected. This information should be provided for the conditions with and without the project.

B. Alternative plans that could substantially reduce or eliminate salt discharge. Alternative plans must include:

1. Description of water rights, including beneficial uses, diversions, and consumptive use quantities.

2. Description of alternative water supplies, including provisions for water reuse, if any.

3. Description of quantity and quality of proposed discharge.

4. Description of how salts removed from discharges shall be disposed of to prevent their entering surface waters or ground-water aquifers.

5. Technical feasibility of the alternatives.

6. Total construction, operation, and maintenance costs; and costs in dollars per ton of salt removed from the discharge.

7. Closure plans to ensure termination of any proposed discharge at the end of the economic life of the project.

8. A statement as to the one alternative plan for reduction of salt discharge that the applicant recommends be adopted, including an evaluation of the technical, economic, and legal practicability of achieving no discharge of salt.

9. Such information as the permitting authority may deem necessary.

IV. In determining whether a "no-salt" discharge is practicable, the permit-issuing authority shall consider, but not be limited to, the water rights and the technical, economic, and legal practicability of achieving no discharge of salt.

V. Where "no-salt" discharge is determined not to be practicable the permitting authority shall, in determining permit conditions, consider:

A. The impact of the total proposed salt discharge of each alternative on the lower main stem in terms of both tons per year and concentration.

B. Costs per ton of salt removed from the discharge for each plan alternative.

C. The compatibility of state water laws with each alternative.

D. Capability of minimizing salinity discharge.

E. The localized impact of the discharge.

F. Minimization of salt discharges and the preservation of fresh water by using intercepted ground water for industrial processes, dust control, etc. whenever it is economically feasible and environmentally sound.

**POLICY**
**FOR IMPLEMENTATION OF**
**COLORADO RIVER SALINITY STANDARDS**
**THROUGH THE NPDES PERMIT PROGRAM**
**FOR FISH HATCHERIES**

Adopted by
The Colorado River Basin Salinity Control Forum

October 28, 1988

The states of the Colorado River Basin in 1977 adopted the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." The objective was for "no-salt return" whenever practicable for industrial discharges and an incremental increase in salinity over the supply water for municipal discharges. The Forum addressed the issue of intercepted ground water under the 1977 policy, and adopted a specific policy dealing with that type of discharge.

A specific water use and associated discharge which has not been here-to-fore considered is discharges from fish hatcheries. This policy is limited exclusively to discharges from fish hatcheries within the Colorado River Basin. The discharges from fish hatcheries need to be addressed in a manner consistent with the 1977 and 1980 Forum policies.

The basic policy for discharges from fish hatcheries shall permit an incremental increase in salinity of 100 mg/l or less above the flow weighted average salinity of the intake supply water. The 100 mg/l incremental increase may be waived if the discharged salt load reaching the Colorado River system is less than one ton per day, or 350 tons per year, whichever is less. Evaluation is to be made on a case-by-case basis.

I. The permitting authority may permit a discharge in excess of the 100 mg/l incremental increase at the time of issuance or reissuance of a NPDES discharge permit. Upon satisfactory demonstration by the permittee that it is not practicable to attain the 100 mg/l limit.

II. Demonstration by the applicant must include information on the following factors relating to the potential discharge:

   A. Description of the fish hatchery and facilities.

   B. Description of the quantity and salinity of intake water sources.

   C. Description of salt sources in the hatchery.

D. Description of water rights, including diversions and consumptive use quantities.

E. Description of the discharge, covering location, receiving waters, quantity salt load, and salinity.

F. Alternative plans for minimizing salt discharge from the hatchery. Alternative plans should include:

1. Description of alternative means of salt control.

2. Cost of alternative plans in dollars per ton, of salt removed from discharge.

G. Such other information pertinent to demonstration of non-practicability as the permitting authority may deem necessary.

III. In determining what permit conditions shall be required, the permit-issuing authority shall consider the following criteria including, but not limited to:

A. The practicability of achieving the 100 mg/l incremental increase.

B. Where the 100 mg/l incremental increase is not determined to be practicable:

1. The impact of the proposed salt input of each alternative on the lower main stem in terms of tons per year and concentration.

2. Costs per ton of salt removed from discharge of each alternative plan.

3. Capability of minimizing the salt discharge.

IV. If, in the opinion of the permitting authority, the database for the hatchery is inadequate, the permit will contain the requirement that the discharger monitor the water supply and the discharge for salinity. Such monitoring program shall be completed within two years and the discharger shall then present the information as specified above.

V. All new and reissued NPDES permits for all hatcheries shall require monitoring of the salinity of the intake water supply and the effluent at the time of peak fish population.

A. Analysis for salinity may be either as total dissolved solids (TDS) or be electrical conductivity where a satisfactory correlation with TDS has been established. The correlation should be based on a minimum of five different samples.

# APPENDIX C

## Exceedance Evaluation Analyses

# APPENDIX C

## Exceedance Evaluation

The objective of the salinity program is to limit further degradation of the water quality of the Colorado River. This non-degradation policy will not (and cannot) eliminate the natural variation in salinity that occurs due to variations in hydrologic conditions from year to year. Because the standards are based on long-term averages (decades), the numeric criteria by themselves do not give the water user any real sense of what the water quality might be in any one year. To answer this question, a statistical analysis was prepared to give the user more information about what levels of salinity are possible under various water development and salinity control assumptions. Monthly and daily predictions are not available due to the limitations of the CRSS model, but these should not vary much from the annual values shown. Although year to year variations still occur, most of the seasonality of the system has been greatly reduced due to storage and mixing in Lakes Powell and Mead. Unless otherwise stated, the term "salinity" is an annual value.

**Reading the Exceedance Tables** - Tables C-1, C-2, and C-3 on the next page show the percent of time that various annual salinity levels (column 1) may be exceeded under various assumptions in columns 2, 3, 4, and 5. For example the reader might look in Table C.1 for Hoover, at the "salinity level" of 800 mg/L in column 1, and find under the heading "1995 w/controls" that salinity is predicted to be above 800 mg/L about 33 percent of the time (or conversely, salinity will be less than 800 mg/L about 100%-33% = 67 percent of the time). Looking further down the column, the reader will find that there is virtually no chance (0 percent) that salinity will exceed 1,000 mg/L at the Hoover Station. At the bottom of each table, the reader will also find statistics which show the long-term minimum, maximum, and mean annual salinity.

**1995 w/no controls** - This column shows what would have happened if there had not been a salinity control program. The "1995 with no controls" column shows the percent of time that various salinity levels would be exceeded as if there had been no salinity control program (past or future).

**1995 w/existing controls** - This column shows what might be expected under current conditions. This column shows exceedences for the 1995 level of water development and salinity control. It assumes that Reclamation's Grand Valley, Paradox Valley, Lower Gunnison, and McElmo Creek Units are essentially completed and operational.

For example, the reader may look at Table C.3 - Imperial Salinity Levels, at the 1,000 mg/L salinity level, and find there is a 18 percent chance that salinity may go above 1,000 mg/L at Imperial Dam. As the reader can also see, the mean of 882 mg/L is above the numeric criteria level of 879 mg/L. This is because there is not currently enough salinity control to offset water development.

**2015 w/existing controls** - This column shows what would happen if no new controls were implemented beyond those already in place.

**2015 w/plan** - This column shows the impact of the plan of implementation on the projected 2015 level of water development. It also shows salinity levels at full compliance with the numeric criteria. Since the Hoover station requires the most controls to meet the numeric criteria, salinity levels at the other two stations are somewhat lower than if they were the limiting stations. As the reader can see in the Hoover table, the mean of 723 mg/L matches the numeric criteria of 723 mg/L.

## Table C-1 Hoover Salinity Levels

| salinity level (mg/L) | Exceedance Percentage | | | |
|---|---|---|---|---|
| | 1995 w/no controls | 1995 w/existing controls | 2015 w/existing controls | 2015 w/plan |
| 600 | 100 | 95 | 100 | 87 |
| 700 | 81 | 69 | 79 | 64 |
| 800 | 57 | 33 | 55 | 20 |
| 900 | 14 | 6 | 12 | 3 |
| 1000 | 0 | 0 | 0 | 0 |
| | Statistics (mg/L) | | | |
| Minimum | 607 | 565 | 599 | 532 |
| Maximum | 1007 | 965 | 999 | 932 |
| Mean | 798 | 756 | 790 | 723 |

## Table C-2 Parker Salinity Levels

| salinity level (mg/L) | Exceedance Percentage | | | |
|---|---|---|---|---|
| | 1995 w/no controls | 1995 w/existing controls | 2015 w/existing controls | 2015 w/plan |
| 600 | 100 | 96 | 100 | 89 |
| 700 | 83 | 73 | 82 | 68 |
| 800 | 63 | 46 | 61 | 29 |
| 900 | 20 | 9 | 19 | 5 |
| 1000 | 2 | 1 | 2 | 0 |
| 1100 | 0 | 0 | 0 | 0 |
| | Statistics (mg/L) | | | |
| Minimum | 614 | 572 | 608 | 541 |
| Maximum | 1064 | 1022 | 1058 | 991 |
| Mean | 817 | 775 | 810 | 743 |

## Table C-3 Imperial Salinity Levels

| salinity level (mg/L) | Exceedance Percentage | | | |
|---|---|---|---|---|
| | 1995 w/no controls | 1995 w/existing controls | 2015 w/existing controls | 2015 w/plan |
| 600 | 100 | 100 | 100 | 100 |
| 700 | 96 | 89 | 96 | 86 |
| 800 | 77 | 69 | 79 | 65 |
| 900 | 60 | 53 | 60 | 45 |
| 1000 | 29 | 18 | 29 | 12 |
| 1100 | 8 | 4 | 8 | 3 |
| 1200 | 1 | 1 | 1 | 1 |
| | Statistics (mg/L) | | | |
| Minimum | 660 | 618 | 664 | 597 |
| Maximum | 1280 | 1238 | 1284 | 1217 |
| Mean | 924 | 882 | 928 | 861 |

## Impacts of Wet and Dry Hydrologic Sequences

This section of the appendix analyzes how the wettest and driest 5-year periods on record would influence salinity levels under existing reservoir conditions (end of 1995 levels). It also demonstrates how salinity is moderated by antecedent conditions. The 5 wettest years were from 1983 - 1987. Trace I below continues after the 5 year period with the hydrologic conditions recorded from 1988 - 1990 (the database has not yet been updated to include 1991 - 1995) then uses the record from 1906 - 1917. The 5 driest years of record are 1930 - 1934. Trace 2 below continues on with measured flow amounts from 1935 to 1949.

Table C-3 indicates there is an 18 percent chance that salinity will exceed 1,000 mg/L at Imperial Dam under the "1995 w/existing controls" scenario. This statistic is accurate over the long term, however short-term salinity is greatly influenced by reservoir water quality and storage. While the information provided in Tables C-1 through C-3 is valuable for understanding the long-term impact of hydrology on the exceedance of the numeric criteria, to better conceptualize the impacts of wet and dry cycles, an analysis was performed.

The CRSS model was used to evaluate how quickly salinity might decrease or increase from its present level in the system due to wet and dry cycles (see Figure C-1). Trace 1 is the 20 year period of record that begins with the wettest 5-year period. Trace 1 mirrors Trace 2 in the first 5 years (salinity drops quickly in response to high flows). Though Trace 1 starts with the wettest 5-year period on record it is followed by one of the drier periods on record. Salinity levels increase fairly quickly due to this drought, but do not approach the levels of Trace 2 because of the antecedent reservoir conditions. The high flows in the first 5 years flushed out the reservoir system. Though Trace 1 experiences a severe drought from 1999 - 2003, salinity levels do not climb nearly as high as Trace 2 because of this fresh water storage. Trace 2 is the 20 year period of record starting with the driest 5 year period. This trace in Figure C-1 shows that it would take about 3 years for salinity

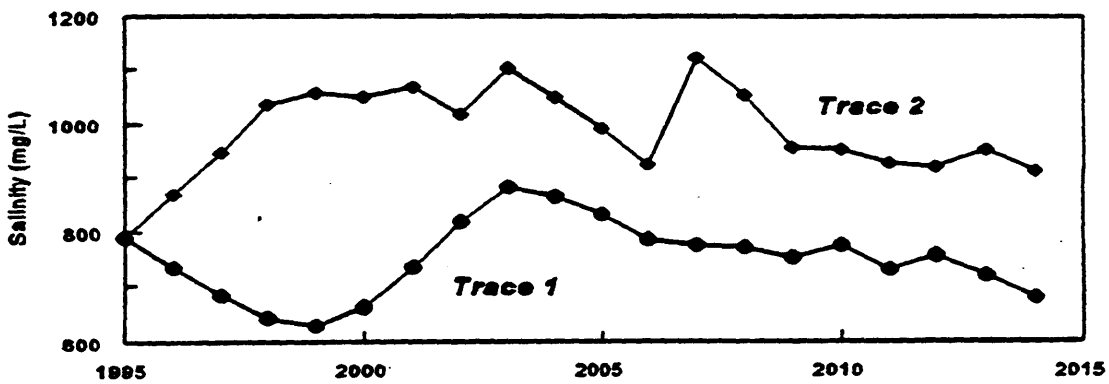



Figure C-1 Impacts of Wet and Dry Hydrologic Sequences on Salinity Levels at Imperial Dam.

to increase to 1,000 mg/L at Imperial Dam. This trace also demonstrates how slowly salinity concentrations might decrease following a severe drought given this particular hydrologic sequence. In reality, future hydrologic conditions are unknown.

# APPENDIX D

## List of NPDES Permits

## LEGEND

### NPDES PERMITS
### EXPLANATION CODES

### COLORADO RIVER BASIN SALINITY CONTROL FORUM

NPDES permits are reviewed under two different criterium under Forum policy; these being municipal and industrial. In order for a permittee to be in compliance under the municipal criterium, the increase in concentration between inflow and outflow can not be greater than 400 mg/L. Forum industrial criterium requires that no industrial user discharges more than 1.00 ton/day. Under Forum policy there can be granted exceptions to these limitations by the states. The following gives an explanation of the current status of the NPDES permits. Because at any given time many of the approximate 600 permits identified in this list are being reviewed, reissued, and/or terminated, and new discharge permits are being filed, this list must be considered as being subject to frequent change.

#### MUNICIPAL

(M) Municipal user in compliance with Forum policy.

(M-1) Permit has expired or been revoked. No discharge.

(M-2) Permittee is not currently discharging.

(M-3) Measurement of TDS is not currently required, but the state and/or EPA plans to require measurements of both inflow and outflow when the permit is reissued.

(M-4) Measurements of inflow are not consistent with Forum policy;

(M-4A) Therefore, it is not known whether or not this municipal user is in compliance.

(M-4B) However, since outflow concentration is less than 500 mg/L it is presumed that this permit is not in violation of the <400 mg/L increase.

(M-5) This permit is in violation of Forum policy in that there is an increase in concentration of >400 mg/L over the source waters.

(M-5A) The state is currently working to bring them into compliance.

(M-6) This permit requires no discharge or discharge only under rare and extreme hydrologic conditions. Thus, flow and concentration measurements are not required.

(M-7) Insufficient data to know the status of this permit.

* Permit issued to a federal agency or an Indian tribe and the responsibility of EPA.

#### INDUSTRIAL

(I) Industrial user in compliance with Forum policy.

(I-1) Permit has expired or been revoked. No discharge.

(I-2) Permittee is not currently discharging.

(I-3) Measurement of TDS is not currently required, but the state and/or EPA plans to require measurements of both volume and concentration of outflow when the permit is reissued.

(I-4) Either concentration or volume of outflow are not currently being made as stipulated, thus the permit is in violation of Forum policy. It is not known if the permit is in excess of the <1.00 ton/day requirement.

(I-5) This permit is in violation of Forum policy in that they are discharging >1.00 ton/day of salts.

(I-5A) No provision has been made allowing this violation of Forum policy.

(I-5B) Though discharge is >1.00 ton/day, in keeping with Forum policy the discharger has demonstrated the salt reduction is not practicable and the requirement has been waived.

(I-5C) The use of water under this permit is for thermal energy. Only heat is extracted and thus the salt and water which are discharged into the river would have done so naturally. They are covered by the Forum's policy on intercepted ground waters.

(I-5D) This permit is for a fish hatchery. The use of the water is a one-time pass through, and <1.00 ton/day of salt is being discharged.

(I-5E) This permit is for the interception and passage of ground waters and thus is excepted under the Forum's policy on ground-water interception.

(I-6) This permit requires no discharge or discharge only under rare and extreme hydrologic conditions. Thus, flow and concentration measurements are not required.

(I-7) Insufficient data to know the current status of this permit.

**NPDES PERMITS**
**COLORADO RIVER BASIN SALINITY CONTROL FORUM**
**DECEMBER 31, 1994**

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATION CODE |
|---|---|---|---|---|---|---|
| AZ0023311 | | APS/CHOLLA POWER PLANT | --- | 273.600 | 0.00 | I-2 |
| AZ0110167 | 900 | BIA HUNTERS POINT SCHOOL | N/A | 0.000 | 0.00 | M-6* |
| AZ0022560 | | BIA KEAMS CANYON | --- | 0.030 | 0.00 | |
| AZ0110213 | 900 | BIA LOW MOUNTAIN SCHOOL | N/A | 0.000 | 0.00 | M-6* |
| AZ0110043 | 801 | BIA NAZLINI BOARDING SCHOOL | N/A | 0.000 | 0.00 | M-6* |
| AZ0110175 | 900 | BIA PINE SPRINGS SCHOOL | N/A | 0.000 | 0.00 | M-2* |
| AZ0110094 | 801 | BIA TEEC NOS POS SCHOOL | N/A | 0.000 | 0.00 | M-6* |
| AZ0022411 | | BILTMORE PROPS/KACHINA GARDENS | --- | 0.0128 | 0.00 | I |
| AZ0023507 | | BLAKE RANCH RVP | --- | 0.003 | 0.00 | I-6 |
| AZ0023035 | | BLUE BEACON OF KINGMAN | --- | 0.030 | 0.00 | I-6 |
| AZ0021610 | 900 | CAMERON TRADING POST | --- | 0.054 | 0.00 | I |
| AZ0021024 | 920 | CITIZENS UTILITIES - RIVERBEND | 400 | 0.170 | 0.28 | M-4A |
| AZ0022462 | 940 | COLORADO RIVER INDIAN TRIBE WTP | --- | 0.040 | 0.00 | M-6* |
| AZ0021415 | 940 | COLORADO RIVER JOINT VENTURE | 400 | 1.200 | 2.00 | M-4A |
| AZ0022268 | 930 | CYPRUS BAGDAD COPPER DIV | 0 | 0.000 | 0.00 | I-2 |
| AZ0022322 | 900 | ENERGY FUELS NUCLEAR KANAB | 0 | 0.000 | 0.00 | |
| AZ0020427 | 900 | FLAGSTAFF, CITY OF, WILDCAT HILL | --- | 6.000 | 0.00 | M-4B |
| AZ0023639 | | FLAGSTAFF, CITY OF-RIO DE FLAG | --- | 4.000 | 0.00 | M-3 |
| AZ0022152 | 900 | GRAND CANYON NATIONAL PARK | --- | 0.750 | 0.00 | I-7 |
| AZ0023566 | | GRAND CANYON RAILWAY | --- | --- | 0.00 | |
| AZ0022187 | | HARRISON MINING/TYRO MINE | --- | --- | 0.00 | I-1 |
| AZ0020257 | 900 | HOLBROOK, CITY OF | --- | 1.300 | 0.00 | M-4A |
| AZ0022489 | | KINGMAN/DOGTOWN | 400 | 0.520 | 0.87 | M |
| AZ0022918 | | LAKE INVESTMENTS % LIVECO | --- | 0.540 | 0.00 | I-6 |
| AZ0022098 | 940 | LE PERA SCHOOL - PARKER S. D. #27 | 30 | --- | 0.00 | M-4A |
| AZ0023647 | | MOHAVE TOPOCK COMPRESSOR STATION | --- | 0.144 | 0.00 | I-6 |
| AZ0022195 | | NTUA/GANADO | 400 | 0.400 | 0.67 | |
| AZ0022471 | | NTUA/KAIBETO | --- | 0.010 | 0.00 | |
| AZ0022802 | | NTUA/ROUGH ROCK LAGOONS | --- | 0.007 | 0.00 | |
| AZ0020265 | 801 | NTUA/CHINLE | 400 | 0.783 | 1.31 | M-4A |
| AZ0020281 | 801 | NTUA/KAYENTA | 400 | 0.090 | 0.15 | M-4A |
| AZ0021920 | 801 | NTUA/MANY FARMS | --- | 0.014 | 0.00 | M-4A |
| AZ0020290 | 900 | NTUA/TUBA CITY | 400 | 1.100 | 1.84 | M-4B |
| AZ0021555 | 900 | NTUA/WINDOW ROCK | 400 | 1.320 | 2.20 | M-4A |
| AZ0022284 | 940 | PARKER, TOWN OF | --- | 0.0129 | 0.00 | M-7 |
| AZ0022179 | 900 | PEABODY COAL CO. | --- | 0.000 | 0.00 | I-2 |
| AZ0022756 | | PETRO STOP CENTER/KINGMAN | 400 | 0.050 | 0.08 | I-6 |
| AZ0023752 | | QUARTZSITE, CITY OF WWTF | --- | 0.045 | 0.00 | M-3 |
| AZ0022772 | | ST. JOHNS POTW | --- | 0.500 | 0.00 | M |
| AZ0023698 | | SENITA VILLAGE RV RESORT | --- | 0.035 | 0.00 | M-6 |
| AZ0023477 | | S. GRAND CANYON S.D. | --- | 0.750 | 0.00 | I-6 |
| AZ0021474 | | STONE FOREST INDUSTRIES/FLAGSTAFF | --- | 0.015 | 0.00 | I-1 |
| AZ0023884 | | TEEC NOS POS COMMUNITY WASTEWATER | --- | 0.080 | 0.00 | M-6 |
| AZ0110248 | | USBR/DAVIS DAM | --- | 0.027 | 0.00 | I-6 |
| AZ0110019 | | USBR/GLEN CANYON CRSP | 400 | 0.015 | 0.03 | I-6 |
| AZ0110329 | | USBR/HOOVER DAM | 400 | 0.055 | 0.09 | I |
| AZ0110272 | | USFS/KAIBAB/JACOB LAKE | --- | --- | 0.00 | |
| AZ0000132 | 920 | USFW/WILLOW BEACH FISH HATCHERY | --- | 20.800 | 0.00 | I-5A |
| AZ0023612 | | USNPS/GRAND CANYON/DESERT VIEW | 400 | 0.040 | 0.07 | M-6 |
| AZ0110426 | 900 | USNPS/GRAND CANYON/NORTH RIM | --- | 0.150 | 0.00 | I |
| AZ0023621 | | USNPS/GRAND CANYON/GARDEN CREEK | 100 | 0.450 | 0.19 | M-6 |
| AZ0023523 | | USNPS/KATHERINE'S LANDING | 100 | 0.200 | 0.08 | M-6 |
| AZ0020346 | 900 | WILLIAMS, CITY OF | --- | 0.540 | 0.00 | M-3 |
| AZ0023361 | | WILLIAMS WWTP | --- | 0.033 | 0.00 | M-6 |
| AZ0023833 | | WINSLOW, CITY OF WTP | --- | 1.600 | 0.00 | M-3 |
| CA0104205 | 920 | NEEDLES, CITY OF | 1231 | 0.960 | 4.93 | M |
| CA7000005 | 940 | USBR, PARKER DAM AND POWER PLANT DWF | 45 | 0.003 | 0.00 | M |
| COG500272 | | ABBOTT READY MIX INC. | 877 | 1.103 | 4.04 | I-5E |
| CO0039993 | 801 | AIRCO INDUSTRIAL GASES/BOC GROUP | 2350 | 0.006 | 0.06 | I |

NPDES PERMITS
COLORADO RIVER BASIN SALINITY CONTROL FORUM
DECEMBER 31, 1994

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATIO CODE |
|---|---|---|---|---|---|---|
| COG500141 | 100 | ALPINE ROCK CO. | 118 | 0.135 | 0.07 | I |
| CO0042447 | | AMERICAN ATLAS #1 LLC | 3093 | 0.072 | 0.93 | I |
| CO0036609 | | AMERICAN SHIELD COAL MINE | 0 | 0.000 | 0.00 | I-1 |
| CO0026468 | 801 | AMORELLI JOE & CHERYL/LIGHTNER CR. | 490 | 0.001 | 0.00 | M |
| CO0039683 | 510 | ANDRIKOPOULOS A. G. | 0 | 0.000 | 0.00 | I-2 |
| CO0026387 | 100 | ASPEN CONSOLIDATED SAN DIST | 606 | 1.720 | 4.35 | M |
| CO0022721 | 100 | ASPEN VILLAGE | 0 | 0.280 | 0.00 | M |
| COG582008 | | BACA GRANDE WATER & SAN DIST | 326 | 0.020 | 0.03 | M |
| CO0021491 | 100 | BASALT SANITATION DISTRICT | 284 | 0.210 | 0.25 | M |
| CO0043346 | | BASALT TOWN OF - WTP | 250 | 0.370 | 0.39 | I |
| CO0039063 | 100 | BATTLEMENT MESA METRO DIST. | 760 | 0.239 | 0.76 | M |
| CO0038989 | 100 | BATTLEMENT MESA METRO DIST.-WTP | 0 | 0.000 | 0.00 | I-2 |
| CO0039276 | 801 | BAYFIELD SAN DIST-GEM VILLAGE | 450 | 0.018 | 0.03 | M |
| CO0020273 | 801 | BAYFIELD SANITARY DISTRICT | 345 | 0.174 | 0.25 | M |
| COG850015 | 220 | BEAR COAL COMPANY INC.-BEAR MINE | 0 | 0.000 | 0.00 | I-6 |
| CO0042111 | | BEAR REUDI DBA TRIMBLE HOT SPGS | 3284 | 0.376 | 5.15 | I-5C |
| CO0023663 | | BENSON dba COUNTRY MEADOWS MHP | 380 | 0.013 | 0.02 | M |
| CO0031445 | 801 | BINCKES ROBERT dba 5 BRANCHES CMPG | 0 | 0.000 | 0.00 | M-2 |
| COG640020 | 100 | BLUE RIVER WTR DIST-PEAK 7 WPT | 0 | 0.000 | 0.00 | I |
| COG500150 | 300 | BOUNDS & SONS INC.-BOUNDS PIT | 0 | 0.000 | 0.00 | I-1 |
| CO0033685 | 220 | BOWIE RESOURCES LIMITED | 181 | 0.004 | 0.00 | I |
| CO0021539 | 100 | BRECKENRIDGE SANITATION DISTRICT | 298 | 1.280 | 1.59 | M |
| COG640053 | | BRECKENRIDGE TOWN OF - WTP | 0 | 0.000 | 0.00 | I-2 |
| COG500096 | 801 | BURNETT CONSTRUCTION COMPANY | 0 | 0.000 | 0.00 | I-1 |
| CO0026981 | 220 | CAMP BIRD COLORADO INC. | 900 | 1.500 | 5.63 | I |
| CO0040134 | 100 | CANYON CREEK ESTATES | 662 | 0.009 | 0.02 | M |
| CO0026751 | 100 | CARBONDALE TOWN OF | 462 | 0.347 | 0.67 | M |
| COG640027 | 100 | CARBONDALE TOWN OF WTP | 0 | 0.000 | 0.00 | I-2 |
| CO0031984 | 220 | CEDAREDGE TOWN OF | 272 | 0.158 | 0.18 | M |
| COG640015 | 220 | CEDAREDGE TOWN OF - WTP | 172 | 0.188 | 0.13 | I |
| COG500119 | 100 | CENTRAL AGGREGATES INC. - E RIFLE | 0 | 0.000 | 0.00 | I-2 |
| CO0033260 | 300 | CLIFTON SANITATION DISTRICT #1 | 924 | 0.030 | 0.12 | M |
| CO0033791 | 300 | CLIFTON SANITATION DISTRICT #2 | 692 | 0.730 | 2.11 | M |
| CO0000248 | 100 | CLIMAX MOLYBDENUM CO.-CLIMAX MINE | 1108 | 7.360 | 34.03 | I-5B |
| CO0035394 | 190 | CLIMAX MOLYBDENUM CO.-KEYSTONE MINE | 1053 | 0.367 | 1.61 | I |
| CO0041076 | | COCA-COLA BOTTLING COMPANY | 708 | 0.005 | 0.01 | I |
| CO0040487 | 100 | COLLBRAN TOWN OF WWTP | 701 | 0.106 | 0.31 | M |
| CO0043389 | | COLO DEPT CORRECTIONS - DELTA | 450 | 0.020 | 0.04 | M |
| CO0040771 | 100 | COLO DEPT CORRECTIONS - RIFLE | 0 | 0.000 | 0.00 | M-2 |
| COG070039 | 100 | COLO DEPT HIGHWAYS-DEBEQUE | 0 | 0.000 | 0.00 | I-1 |
| COG130001 | 100 | COLO DIV WILDLIFE-CRYSTAL RIVER | 309 | 8.900 | 11.48 | I-5D |
| COG130005 | 801 | COLO DIV WILDLIFE-DURANGO HATCHERY | 273 | 2.980 | 3.39 | I-5D |
| COG130007 | 100 | COLO DIV WILDLIFE-FINGER ROCK | 240 | 3.070 | 3.07 | I-5D |
| COG130004 | 190 | COLO DIV WILDLIFE-PITKIN TROUT | 124 | 10.520 | 5.44 | I-5D |
| COG130011 | 100 | COLO DIV WILDLIFE-RIFLE FALLS | 337 | 24.820 | 34.90 | I-5D |
| COG130006 | 190 | COLO DIV WILDLIFE-ROARING JUDY | 210 | 18.530 | 16.24 | I-5D |
| CO0000043 | 220 | COLO UTE ELEC ASSN-JIM BULLOCK | 0 | 0.000 | 0.00 | I-1 |
| COG850017 | 500 | COLO-WYO COAL CO. L.P. | 1438 | 0.065 | 0.39 | I-6 |
| CO0042765 | | COLORADO MINING & SMELTING | 0 | 0.000 | 0.00 | I-1 |
| COG850013 | 500 | COLORADO YAMPA COAL COMPANY | 1700 | 0.008 | 0.06 | I-6 |
| COG500184 | | COLORADO YULE MARBLE CO. | 212 | 0.004 | 0.00 | I |
| COG500245 | | CONNELL RESOURCES - THOMPSON PIT | 185 | 0.485 | 0.37 | I |
| CO0038440 | | CONRAD JOHN - CONRAD JOINT VENTURE | 301 | 0.001 | 0.00 | M |
| CO0033537 | 300 | COORS CERAMIC COMPANY | 252 | 0.075 | 0.08 | I |
| CO0021598 | 100 | COPPER MOUNTAIN WATER & SAN. DIST. | 302 | 0.254 | 0.32 | M |
| COG500159 | 300 | CORN CONSTRUCTION COMPANY | 0 | 0.000 | 0.00 | I-2 |
| COG500160 | 300 | CORN CONSTRUCTION COMPANY | 0 | 0.000 | 0.00 | I-2 |
| COG500155 | 300 | CORN CONSTRUCTION COMPANY - FRUITA | 0 | 0.000 | 0.00 | I-2 |
| COG500003 | 300 | CORN CONSTRUCTION COMPANY - LATHAM | 0 | 0.000 | 0.00 | I-2 |
| COG500156 | 300 | CORN CONSTRUCTION COMPANY -32 1/4RD | 2147 | 0.160 | 1.43 | I-5E |
| CO0027545 | 801 | CORTEZ SANITATION DIST-SOUTHWEST | 690 | 0.141 | 0.41 | M |

NPDES PERMITS
COLORADO RIVER BASIN SALINITY CONTROL FORUM
DECEMBER 31, 1994

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATION CODE |
|---|---|---|---|---|---|---|
| CO0020125 | 801 | CORTEZ SANITATION DISTRICT-NORTH | 827 | 0.223 | 0.77 | M |
| CO0027880 | 801 | CORTEZ SANITATION DISTRICT-SOUTH | 508 | 0.556 | 1.18 | M |
| CO0036251 | 310 | COTTER CORP-JD-7 & JD-9 MINES | 1456 | 0.030 | 0.18 | I |
| COG581002 | 100 | COTTONWOOD SPRINGS MHP LTD | 2395 | 0.060 | 0.60 | M |
| CO0040037 | 500 | CRAIG CITY OF WWTP | 593 | 0.977 | 2.42 | M |
| CO0037729 | 220 | CRAWFORD SEWER TREATMENT PLANT | 291 | 0.021 | 0.03 | M |
| CO0031836 | 190 | CRESTED BUTTE SOUTH METRO DISTRICT | 371 | 0.023 | 0.04 | M |
| CO0020443 | 190 | CRESTED BUTTE TOWN OF | 218 | 0.243 | 0.22 | M |
| COG500255 | | CURRY RICHARD & MARILYN | 1888 | 0.054 | 0.43 | I |
| CO0034142 | 500 | CYPRUS EMPIRE ENERGY CORP-EAGLE MINE | 1093 | 3.320 | 15.14 | I-5B |
| CO0027154 | 500 | CYPRUS YAMPA VALLEY COAL COMPANY | 2988 | 1.070 | 13.34 | I-5B |
| COG500241 | | DALTON PIT SANDCO INC. | 0 | 0.000 | 0.00 | I-1 |
| CO0023418 | 100 | DEBEQUE TOWN OF | 988 | 0.020 | 0.08 | M |
| COG500209 | | DELTA SAND & GRAVEL - PIT #4 | 980 | 1.500 | 6.13 | I-5E |
| COG500136 | 220 | DELTA SAND & GRAVEL CO - PIT #1 | 1142 | 1.500 | 7.15 | I-5E |
| CO0039641 | 220 | DELTA CITY OF | 1343 | 1.010 | 5.66 | M |
| COG640006 | 100 | DILLON TOWN OF - WTP | 0 | 0.015 | 0.00 | I |
| CO0040509 | 801 | DOLORES TOWN OF | 470 | 0.162 | 0.32 | M |
| CO0037702 | 801 | DOSH JOHN C SR dba VISTA VERDE VIL | 0 | 0.000 | 0.00 | M-2 |
| CO0023434 | 310 | DOVE CREEK TOWN OF | 632 | 0.040 | 0.11 | M |
| COG500271 | | DUCKELS CONSTRUCTION | 24 | 0.050 | 0.01 | I-5E |
| CO0041181 | | DURANGO SCHOOL DISTRICT 9R | 0 | 0.000 | 0.00 | I-2 |
| CO0043095 | | DURANGO WEST METRO DIST #2 | 563 | 0.078 | 0.18 | M |
| CO0036226 | 801 | DURANGO WEST METROPOLITAN DISTRICT | 0 | 0.000 | 0.00 | M-1 |
| CO0024082 | 801 | DURANGO CITY OF | 393 | 1.890 | 3.10 | M |
| CO0021059 | 100 | EAGLE SANITATION DISTRICT | 660 | 0.160 | 0.44 | M |
| COG640031 | 100 | EAGLE TOWN OF WTP | 0 | 0.000 | 0.00 | I-2 |
| CO0040720 | 190 | EAST RIVER REGIONAL SAN DIST-WWTP | 237 | 0.036 | 0.04 | M |
| COG850019 | 100 | EASTSIDE COAL CO. INC. | 0 | 0.000 | 0.00 | I-6 |
| CO0040266 | 801 | EDGEMONT RANCH METRO DISTRICT | 525 | 0.011 | 0.02 | M |
| CO0039691 | 801 | EDMUNDS GEOFFREY dba CASCADE VLG. | 455 | 0.019 | 0.04 | M |
| COG500039 | | ELAM CONSTRUCTION - CHAMBERS PIT | 0 | 0.000 | 0.00 | I-2 |
| COG500225 | | ELAM CONSTRUCTION - DAVENPORT | 0 | 0.000 | 0.00 | I-2 |
| COG500210 | | ELAM CONSTRUCTION - MULE FARM GR | 0 | 0.000 | 0.00 | I-2 |
| COG500107 | 300 | ELAM CONSTRUCTION INC-29 ROAD PIT | 0 | 0.000 | 0.00 | I-2 |
| COG500108 | 300 | ELAM CONSTRUCTION INC-BOUNDS PIT | 0 | 0.000 | 0.00 | I-2 |
| COG500130 | 300 | ELAM CONSTRUCTION INC-GRIFFIN PIT | 0 | 0.000 | 0.00 | I-2 |
| COG500106 | 300 | ELAM CONSTRUCTION-19 ROAD PIT | 0 | 0.000 | 0.00 | I-1 |
| CO0031551 | 801 | ELLIS JAMES M dba NARROW GAUGE MHP | 458 | 0.006 | 0.01 | M |
| COG075002 | | EMERALD GAS OPERATING CO. | 0 | 0.000 | 0.00 | I-2 |
| COG850003 | 510 | ENRON COAL COMPANY-NORTHERN #1 | 564 | 0.003 | 0.01 | I-6 |
| COG850002 | 510 | ENRON COAL COMPANY-RIENAU #2 | 0 | 0.000 | 0.00 | I-6 |
| CO0031003 | 500 | EUZOA BIBLE CHURCH | 39 | 0.000 | 0.00 | M |
| CO0038229 | 100 | EVERIST L.G. - LOVE GRAVEL PIT | 102 | 0.075 | 0.03 | I |
| COG310022 | | EVERIST L.G. INC. | 0 | 0.000 | 0.00 | I-2 |
| CO0038270 | 100 | EXXON COMPANY USA-COLONY SHALE OIL | 0 | 0.000 | 0.00 | I-2 |
| CO0034193 | 300 | FIBREBOARD CORPORATION | 824 | 0.027 | 0.09 | I |
| CO0040240 | | FIDELITY TRUST BUILDING | 0 | 0.000 | 0.00 | I-1 |
| CO0040967 | 190 | FILOHA MEADOWS HEALTH EDUCATION | 2764 | 0.025 | 0.29 | I |
| COG500114 | 100 | FLAG SAND & GRAVEL-SILT PIT | 700 | 0.055 | 0.16 | I |
| CO0042439 | | FOREST LAKES METRO DIST. | 205 | 0.040 | 0.03 | M |
| CO0028827 | 801 | FORREST GROVES ESTATES | 543 | 0.005 | 0.01 | M |
| CO0040142 | 100 | FRASER SANITATION DISTRICT | 162 | 0.303 | 0.20 | M |
| CO0020451 | 100 | FRISCO SANITATION DISTRICT | 481 | 0.460 | 0.92 | M |
| CO0037907 | 100 | FRISCO TOWN OF WTP | 43 | 0.005 | 0.00 | I |
| CO0020257 | 100 | FRUITA TOWN OF | 1113 | 0.410 | 1.90 | M-5A |
| COG075003 | | FUEL RESOURCES DEV. CO. | 440 | 0.016 | 0.03 | I |
| CO0042463 | | GATEWAY OF SNOWMASS MESA SUBDIVISN | 328 | 0.000 | 0.00 | M |
| CO0000141 | 100 | GLENWOOD HOT SPRINGS LODGE & POOL | 16282 | 1.160 | 78.82 | I-5C |
| COG640052 | 100 | GLENWOOD SPRINGS CITY OF-WTP | 145 | 0.040 | 0.02 | I |
| CO0020516 | 100 | GLENWOOD SPRINGS CITY OF-WWTF | 795 | 0.786 | 2.61 | M-5A |

NPDES PERMITS
COLORADO RIVER BASIN SALINITY CONTROL FORUM
DECEMBER 31, 1994

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATIO CODE |
|---|---|---|---|---|---|---|
| CO0020699 | 100 | GRANBY SANITATION DISTRICT | 287 | 0.320 | 0.38 | M |
| COG640044 | 100 | GRAND COUNTY WTR & SAN DIST - WTP | 0 | 0.000 | 0.00 | I-2 |
| CO0032964 | 100 | GRAND COUNTY WTR & SANITATION DIST | 174 | 0.270 | 0.20 | M |
| COG500264 | | GRAND GRAVEL | 0 | 0.000 | 0.00 | I-2 |
| COG500154 | 300 | GRAND JUNCTION CONCRETE PIPE | 0 | 0.000 | 0.00 | I-2 |
| COG500158 | 300 | GRAND JUNCTION PIPE & SUPPLY | 0 | 0.000 | 0.00 | I-2 |
| COG500161 | 300 | GRAND JUNCTION PIPE & SUPPLY | 2881 | 0.110 | 1.32 | I-5E |
| COG640004 | 220 | GRAND JUNCTION CITY OF - WTP | 0 | 0.000 | 0.00 | I-2 |
| CO0040827 | | GRAND VALLEY COAL COMPANY | 0 | 0.000 | 0.00 | I-2 |
| CO0038342 | 100 | GRAND VALLEY COAL COMPANY | 0 | 0.000 | 0.00 | I-2 |
| COG500252 | | GRANT BROS. CONSTRUCTION | 0 | 0.000 | 0.00 | I-2 |
| COG640041 | | GUNNISON COUNTY - DOS RIOS WTP | 0 | 0.000 | 0.00 | I |
| CO0041858 | 220 | GUNNISON COUNTY BOCC-ANTELOPE HILLS | 891 | 0.023 | 0.09 | M |
| CO0041530 | 220 | GUNNISON CITY OF | 365 | 1.170 | 1.78 | M |
| COG584001 | 100 | GYPSUM TOWN OF | 408 | 0.190 | 0.32 | M |
| COG850018 | 500 | H-G COAL CO.-HAYDEN GULCH MINE | 3031 | 0.118 | 1.49 | I-6 |
| CO0027537 | 801 | HARVEY JOHN C. dba PONDEROSA KOA | 303 | 0.005 | 0.01 | M |
| COG850008 | 500 | HAYDEN GULCH TERMINAL INC. | 372 | 0.048 | 0.07 | I-6 |
| CO0040959 | 500 | HAYDEN TOWN OF | 516 | 0.080 | 0.17 | M |
| CO0040452 | 801 | HERMOSA SANITATION DISTRICT | 593 | 0.098 | 0.24 | M |
| COG584002 | | HIGH COUNTRY LODGE A GEN PRTNSHP | 378 | 0.001 | 0.00 | M |
| CO0036315 | 300 | HOLLY PLAZA DEVELOPMENT CO. | 0 | 0.006 | 0.00 | M-3 |
| COG850024 | | HONEYWOOD COAL COMPANY | 0 | 0.000 | 0.00 | I-6 |
| CO0031437 | 801 | HORNBAKER REX dba VALLECITO RESORT | 435 | 0.001 | 0.00 | M |
| CO0024350 | 100 | HOT SULPHUR SPRINGS TOWN OF | 267 | 0.037 | 0.04 | M |
| COG640019 | | HOT SULPHUR SPRINGS TOWN OF - WTP | 86 | 0.029 | 0.01 | I |
| CO0021415 | 220 | HOTCHKISS TOWN OF | 1107 | 0.135 | 0.62 | M |
| CO0026956 | 310 | IDARADO MINING | 0 | 0.000 | 0.00 | I-1 |
| CO0022853 | 801 | IGNACIO SANITARY DISTRICT | 0 | 0.000 | 0.00 | M-6 |
| CO0041220 | | INGLEHART FRED B. dba EL ROCKO MHP | 417 | 0.007 | 0.01 | M |
| COG850034 | 801 | KAISER STEEL RESOURCES-CHIMNEY ROCK | 0 | 0.000 | 0.00 | I-6 |
| COG850010 | | KAISER STEEL-COLO COAL MINE #1 | 0 | 0.000 | 0.00 | I-6 |
| COG500067 | 101 | KENT F. J. PIPELINE/WORLEY DAROLD | 0 | 0.000 | 0.00 | I-5E |
| COG850021 | | KERR COAL | 0 | 0.000 | 0.00 | I-6 |
| COG850036 | | KERR COAL COMPANY - KERR LOADOUT | 0 | 0.000 | 0.00 | I-6 |
| CO0023876 | 100 | KEYSTONE RESORTS MANAGEMENT INC. | 443 | 0.006 | 0.01 | M |
| CO0035319 | 801 | KING WILLARD dbaWOLF CREEK VILLAGE | 0 | 0.000 | 0.00 | M-2 |
| CO0021636 | 100 | KREMMLING SANITATION DISTRICT | 0 | 0.000 | 0.00 | M-2 |
| CO0040673 | 200 | LAKE CITY TOWN OF | 154 | 0.080 | 0.05 | M |
| CO0000078 | 300 | LANDMARK PETROLEUM INC. | 0 | 0.000 | 0.00 | I-2 |
| COG850030 | | LANDMARK RECLAMATION INC. | 0 | 0.000 | 0.00 | I-6 |
| COG584005 | 310 | LAST DOLLAR PUD | 409 | 0.005 | 0.01 | M |
| COG500083 | | LATHAM THOMAS & GINGER-DeBEQUE PIT | 0 | 0.000 | 0.00 | I-1 |
| CO0020303 | 100 | LAZY GLEN HOMEWONERS ASSN. | 377 | 0.040 | 0.06 | M |
| COG500229 | | LEE GILBERT T. | 745 | 0.390 | 1.21 | I-5E |
| CO0032492 | 801 | LEE RICHARD O.-LEE MOBILE HOME PRK | 353 | 0.007 | 0.01 | M |
| COG850022 | | LOBATO FIDEL - BLUE FLAME COAL | 0 | 0.000 | 0.00 | I-1 |
| CO0041408 | | LOMA LINDA SANITATION DISTRICT | 508 | 0.044 | 0.09 | M |
| CO0021687 | 801 | MANCOS TOWN OF | 343 | 0.116 | 0.17 | M |
| CO0029904 | 801 | MANN DARLENE D dba LIGHTNER CRK MH | 0 | 0.00 | 0.00 | M |
| COG075005 | | MARKWEST ENERGY PARTNERS | 396 | 0.030 | 0.05 | I |
| CO0022781 | 510 | MEEKER SANITATION DISTRICT | 500 | 0.240 | 0.50 | M |
| CO0029203 | 190 | MERIDIAN LAKE PARK CORP. | 231 | 0.011 | 0.01 | M |
| CO0033723 | 300 | MERRIETT PENELOPE/RICH POWELL | 432 | 0.005 | 0.01 | M |
| CO0040053 | 300 | MESA CO./GRAND JUCNTION CITY OF | 973 | 7.240 | 29.40 | M |
| COG500071 | 300 | MESA COUNTY ROAD DEPARTMENT | 0 | 0.000 | 0.00 | I-2 |
| CO0027456 | 510 | MESA COUNTY VALLEY SCHOOL DIST #51 | 0 | 0.000 | 0.00 | M-2 |
| CO0032727 | 300 | MESA WATER & SANITATION DISTRICT | 645 | 0.018 | 0.05 | M |
| COG850026 | 100 | MID CONTINENT RESOURCES INC. | 0 | 0.000 | 0.00 | I-6 |
| CO0000396 | 100 | MID CONTINENT RESOURCES INC. | 3082 | 0.686 | 8.82 | I-5B |
| COG584007 | 100 | MID-VALLEY METROPOLITAN DISTRICT | 558 | 0.173 | 0.40 | M |

NPDES PERMITS
COLORADO RIVER BASIN SALINITY CONTROL FORUM
DECEMBER 31, 1994

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATION CODE |
|---|---|---|---|---|---|---|
| COG850009 | 220 | MINREC INC.-BLUE RIBBON MINE | 0 | 0.000 | 0.00 | I-6 |
| CO0029599 | 100 | MINREC INC.-NORTH THOMPSON CREEK | 1143 | 0.018 | 0.09 | I |
| COG850020 | 220 | MINREC INC.-REED CANYON MINE | 0 | 0.000 | 0.00 | I-2 |
| COG500259 | | MK-FERGUSON CO. - CHANCE GULCH | 0 | 0.000 | 0.00 | I-2 |
| CO0038806 | 100 | MOBILE HOME MANAGEMENT CORP. | 733 | 0.020 | 0.06 | M |
| CO0037621 | 500 | MOFFAT COUNTY IMPROVEMENT-MAYBELL | 515 | 0.010 | 0.02 | M |
| CO0039624 | 220 | MONTROSE CITY OF | 796 | 1.670 | 5.55 | M |
| CO0022969 | 220 | MORRISON CREEK METROPOLITAN DIST | 315 | 0.044 | 0.06 | M |
| CO0038776 | 220 | MOUNTAIN COAL COMPANY-WEST ELK MINE | 1253 | 0.427 | 2.23 | I |
| COG500260 | | MOUNTAIN GRAVEL & CONSTRUCTION | 234 | 2.775 | 2.71 | I-5E |
| CO0027171 | 190 | MT CRESTED BUTTE WTR & SAN DISTRICT | 461 | 0.260 | 0.50 | M |
| CO0040703 | 500 | MT WERNER W&S-STEAMBOAT SPRINGS WTP | 0 | 0.000 | 0.00 | I-2 |
| CO0040754 | 510 | NATEC MINERALS INC. | 0 | 0.000 | 0.00 | I-1 |
| COG850001 | 801 | NATIONAL KING COAL INC. | 0 | 0.000 | 0.00 | I-6 |
| CO0024007 | 310 | NATURITA TOWN OF | 802 | 0.087 | 0.29 | M |
| COG850005 | | NCIG FINANCIAL INC. | 0 | 0.000 | 0.00 | I-6 |
| COG850025 | | NCIG FINANCIAL INC. | 0 | 0.000 | 0.00 | I-6 |
| CO0040479 | 100 | NEW CASTLE TOWN OF WWTP | 621 | 0.076 | 0.20 | M |
| CO0037168 | 190 | NORTH ELK MEADOWS HOA | 536 | 0.007 | 0.02 | M |
| CO0032191 | 310 | NORWOOD SANITATION DISTRICT | 620 | 0.052 | 0.13 | M |
| COG582002 | 310 | NUCLA SANITATION DISTRICT | 1842 | 0.108 | 0.83 | M |
| COG640038 | | NUCLA TOWN OF - WTP | 229 | 0.200 | 0.19 | I |
| COG640057 | 500 | OAK CREEK TOWN OF-WTP | 89 | 0.065 | 0.02 | I |
| CO0041106 | | OAK CREEK TOWN OF-WWTP | 266 | 0.190 | 0.21 | M |
| COG850027 | 801 | OAKRIDGE ENERGY INC. | 0 | 0.000 | 0.00 | I-6 |
| CO0029947 | 100 | OCCIDENTAL OIL SHALE - LOGAN WASH | 1336 | 0.002 | 0.01 | I-2 |
| CO0033961 | 510 | OCCIDENTAL OIL SHALE INC. | 0 | 0.000 | 0.00 | I-2 |
| CO0020907 | 220 | OLATHE TOWN OF | 2263 | 0.257 | 2.43 | M-5A |
| COG640016 | | ORCHARD CITY TOWN OF - WTP | 0 | 1.490 | 0.00 | I |
| CO0028860 | 100 | OURAY RANCH HOMEOWNERS ASSOCIATION | 140 | 0.000 | 0.00 | M |
| CO0043397 | 220 | OURAY CITY OF | 525 | 0.183 | 0.40 | M |
| CO0043222 | | OURAY CITY OF - HOT SPRINGS POOL | 1397 | 0.640 | 3.73 | I-5C |
| CO0000132 | 220 | PACIFIC BASIN RESOURCES-SOMERSET | 2757 | 0.306 | 3.52 | I |
| COG640007 | | PAGOSA AREA W&SD - HATCHER WTP | 0 | 0.000 | 0.00 | I-2 |
| CO0041343 | | PAGOSA AREA WTR & SAN-STEVENS PLANT | 239 | 0.017 | 0.02 | I |
| CO0031755 | 801 | PAGOSA AREA WTR & SAN-VISTA PLANT | 539 | 0.508 | 1.14 | M |
| CO0038032 | 801 | PAGOSA AREA WTR & SANITATION DIST | 728 | 0.071 | 0.22 | M |
| CO0022845 | 801 | PAGOSA SPRINGS SANITATION DISTRICT | 709 | 0.278 | 0.82 | M |
| COG640022 | | PAGOSA SPRINGS TOWN OF - WTF | 35 | 0.011 | 0.00 | I |
| COG584004 | 300 | PALISADE TOWN OF - SEWAGE LAGOON | 380 | 0.237 | 0.38 | M |
| COG640037 | 300 | PALISADE TOWN OF - WTP | 176 | 0.094 | 0.07 | I |
| CO0027713 | 300 | PANORAMA IMPROVEMENT DISTRICT | 516 | 0.056 | 0.12 | M |
| CO0021709 | 220 | PAONIA TOWN OF | 1238 | 0.290 | 1.50 | M-5A |
| COG070069 | 500 | PEABODY COAL CO. - SENECA II MINE | 0 | 0.000 | 0.00 | I-1 |
| COG850007 | | PENNSYLVANIA WEST COAL COMPANY | 0 | 0.000 | 0.00 | I-1 |
| CO0031402 | 801 | PINE-ANIMAS SEWER MGMT CO. | 0 | 0.000 | 0.00 | M-2 |
| CO0032638 | 500 | PITTSBURG & MIDWAY COAL MINE | 3673 | 1.15 | 17.63 | I |
| CO0027146 | 300 | POWDERHORN COAL COMPANY | 1754 | 0.546 | 4.00 | I-5B |
| CO0023485 | 300 | POWDERHORN METRO DIST NO. 1 | 298 | 0.002 | 0.00 | M |
| CO0000523 | 500 | PUBLIC SERVICE CO-HAYDEN PLANT | 286 | 0.016 | 0.02 | I |
| CO0000027 | 300 | PUBLIC SERVICE CO.-CAMEO STATION | 534 | 44.10 | 98.27 | I |
| CO0020176 | 801 | PURGATORY METRO DISTRICT | 678 | 0.138 | 0.39 | M |
| COG850011 | 220 | QUINN COAL COMPANY | 0 | 0.000 | 0.00 | I-1 |
| CO0028525 | 100 | RANCH AT ROARING FORK | 351 | 0.037 | 0.05 | M |
| CO0036366 | 801 | RANCH PROPERTY OWNERS | 615 | 0.011 | 0.03 | M |
| CO0026972 | 510 | RANGELY TOWN OF | 720 | 0.183 | 0.55 | M |
| CO0000108 | 310 | RAPHOLZ SILVER INC. - SILVER BELL | 0 | 0.000 | 0.00 | I-1 |
| COG640012 | | RED CLIFF W&SD - WTP | 0 | 0.001 | 0.00 | I |
| CO0021385 | 100 | RED CLIFF TOWN OF | 363 | 0.225 | 0.34 | M |
| CO0039551 | 100 | REDSTONE CORPORATION | 0 | 0.000 | 0.00 | I-2 |
| CO0023922 | 100 | REDSTONE WATER & SANITATION DIST | 368 | 0.027 | 0.04 | M |

NPDES PERMITS
COLORADO RIVER BASIN SALINITY CONTROL FORUM
DECEMBER 31, 1994

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATI CODE |
|---|---|---|---|---|---|---|
| CO0029793 | 310 | RICO DEVELOPMENT CORPORATION | 0 | 0.000 | 0.00 | I-2 |
| CO0029106 | 220 | RIDGWAY TOWN OF | 355 | 0.047 | 0.07 | M |
| CO0040738 | 100 | RIFLE CITY OF | 1052 | 0.490 | 2.15 | M |
| CO0030970 | 100 | RIFLE CITY OF-RIFLE SOUTH | 780 | 0.046 | 0.15 | M |
| COG500212 | | ROARING FORK RESOURCES | 0 | 0.000 | 0.00 | I-2 |
| CO0039209 | 100 | ROARING FORK RESOURCES-UMETCO PIT | 0 | 0.000 | 0.00 | I-2 |
| COG500227 | | ROARING FORK SAND & GRAVEL INC. | 0 | 0.000 | 0.00 | I-2 |
| COG850023 | 500 | ROCKCASTLE CO.-GRASSY CREEK COAL MN | 0 | 0.000 | 0.00 | I-2 |
| CO0032590 | 500 | ROUTT CO. FOR PHIPPSBURG COMMUNITY | 546 | 0.016 | 0.04 | M |
| CO0039705 | 500 | ROUTT COUNTY FOR MILNER COMMUNITY | 392 | 0.012 | 0.02 | M |
| CO0000051 | | SAMSON RESOURCES COMPANY | 5450 | 1.27 | 28.88 | I |
| CO0031461 | 801 | SAN JUAN RIVER VILLAGE METRO DIST | 327 | 0.010 | 0.01 | M |
| COG500179 | | SCOTT ROBERT | 0 | 0.000 | 0.00 | I-2 |
| CO0037656 | 500 | SENECA COAL COMPANY | 336 | 0.008 | 0.01 | I-5B |
| CO0000221 | 500 | SENECA COAL COMPANY | 2259 | 0.512 | 4.83 | I-5B |
| COG075001 | | SG INTERESTS INC. | 471 | 0.025 | 0.05 | I |
| CO0036781 | 801 | SHALAKO INTERNATIONAL-MAY DAY MINE | 0 | 0.000 | 0.00 | I-2 |
| CO0036978 | 801 | SIERRA VERDE ESTATES INC. | 0 | 0.000 | 0.00 | M-2 |
| CO0029181 | 100 | SILT TOWN OF | 946 | 0.070 | 0.28 | M |
| CO0037460 | 220 | SILVER EAGLE CO.-MOUNTAIN TOP MINE | 83 | 0.000 | 0.00 | I-2 |
| CO0026867 | 220 | SILVER SPRINGS TROUT FARM | 0 | 0.000 | 0.00 | I-1 |
| CO0020826 | 100 | SILVERTHORNE-DILLON JOINT SW | 300 | 1.070 | 1.34 | M |
| CO0020311 | 801 | SILVERTON TOWN OF | 310 | 0.130 | 0.17 | M |
| COG640008 | | SILVERTON TOWN OF - WTP | 0 | 0.004 | 0.00 | I |
| CO0038598 | 100 | SKI SUNLIGHT INC. | 0 | 0.000 | 0.00 | M-2 |
| CO0023086 | 100 | SNOWMASS WATER & SANITATION DIST. | 229 | 0.810 | 0.77 | M |
| COG640050 | 100 | SNOWMASS WATER TREATMENT PLANT | 0 | 0.000 | 0.00 | I-2 |
| CO0043273 | | SONNENALP PROPERTIES INC. | 171 | 0.018 | 0.01 | M |
| CO0031810 | 100 | SOPRIS VILLAGE JOINT VENTURE | 442 | 0.026 | 0.05 | M |
| CO0041262 | | SOUTH DURANGO SANITATION DISTRICT | 720 | 0.053 | 0.16 | M |
| CO0037001 | 220 | SPRING CREEK ESTATES LAGOON | 479 | 0.002 | 0.00 | M |
| CO0038075 | 510 | STAGECOACH SANITATION INC. | 0 | 0.000 | 0.00 | M-2 |
| CO0032280 | 500 | STEAMBOAT HEALTH & RECREATION | 788 | 0.009 | 0.03 | I |
| CO0035556 | 500 | STEAMBOAT LAKE SANITATION DISTRICT | 229 | 0.009 | 0.01 | M |
| CO0020834 | 500 | STEAMBOAT SPRINGS CITY OF | 163 | 1.910 | 1.30 | M |
| CO0029955 | 100 | SUMMIT COUNTY BOCC - SNAKE RIVER | 480 | 0.500 | 1.00 | M |
| COG850012 | 500 | SUN COAL COMPANY INC.- MEADOWS | 203 | 0.004 | 0.00 | I-6 |
| CO0036668 | 500 | SUNLAND MINING CORP-APEX #2 MINE | 0 | 0.000 | 0.00 | I-2 |
| CO0027529 | 801 | SUNNYSIDE GOLD - AMERICAN TUNNEL | 1931 | 2.29 | 18.45 | I-5B |
| CO0000426 | 801 | SUNNYSIDE GOLD - MAYFLOWER MILL | 0 | 0.000 | 0.00 | I-5B |
| CO0036056 | 801 | SUNNYSIDE GOLD - TERRY TUNNEL | 1220 | 0.220 | 1.12 | I-5B |
| CO0035815 | 100 | TALBOTT ENTERPRISES INC. | 1565 | 0.064 | 0.42 | M |
| COG500253 | | TELLURIDE GRAVEL INC. | 208 | 0.299 | 0.26 | I |
| CO0041840 | 310 | TELLURIDE REGIONAL WWTP | 350 | 0.485 | 0.71 | M |
| COG640024 | 310 | TELLURIDE TOWN OF WTP | 131 | 0.002 | 0.00 | I-2 |
| CO0039756 | 220 | TERROR CREEK CO. - PACIFIC BASIN | 0 | 0.000 | 0.00 | I-1 |
| COG310002 | | TEXACO REFINING & MARKETING | 0 | 0.000 | 0.00 | I-2 |
| CO0037699 | 100 | THREE LAKES WTR & SAN-SUN VALLEY | 445 | 0.003 | 0.01 | M |
| CO0047681 | 100 | THREE LAKES WTR & SAN-WILLOW | 218 | 0.416 | 0.38 | M |
| CO0032115 | 500 | TRAPPER MINING INC. | 1652 | 0.111 | 0.77 | I-5B |
| CO0000540 | 310 | TRI-STATE GENERATION | 1660 | 0.348 | 2.41 | I |
| CO0036684 | 500 | TWENTYMILE COAL CO. | 3208 | 0.025 | 0.33 | I |
| CO0042161 | | TWENTYMILE COAL CO. - FOIDEL CREEK | 3027 | 0.010 | 0.13 | I |
| CO0039918 | 100 | UNION OIL CO. - PARACHUTE CREEK | 0 | 0.000 | 0.00 | I-1 |
| COG500047 | | UNITED COMPANIES OF MESA COUNTY | 0 | 0.000 | 0.00 | I-1 |
| COG500201 | | UNITED COMPANIES OF MESA COUNTY | 3896 | 0.105 | 1.71 | I-5E |
| COG500266 | | UNITED COMPANIES OF MESA COUNTY | 7033 | 0.120 | 3.52 | I-5E |
| COG500004 | | UNITED COMPANIES OF MESA COUNTY | 0 | 0.000 | 0.00 | I-1 |
| COG500177 | | UNITED COMPANIES OF MESA COUNTY | 0 | 0.000 | 0.00 | I-2 |
| COG500216 | | UNITED COMPANIES OF MESA COUNTY | 4118 | 0.210 | 3.61 | I-5E |
| COG500218 | | UNITED COMPANIES OF MESA COUNTY | 2739 | 0.175 | 2.00 | I-5E |

**NPDES PERMITS**
**COLORADO RIVER BASIN SALINITY CONTROL FORUM**
**DECEMBER 31, 1994**

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATION CODE |
|---|---|---|---|---|---|---|
| COG500142 | 300 | UNITED SAND & GRAVEL | 0 | 0.000 | 0.00 | I-1 |
| CO0024431 | 100 | UPPER EAGLE VALLEY - AVON | 377 | 2.050 | 3.23 | M |
| CO0037311 | 100 | UPPER EAGLE VALLEY - SQUAW CREEK | 554 | 0.680 | 1.57 | M |
| CO0021369 | 100 | UPPER EAGLE VALLEY - VAIL | 327 | 1.610 | 2.20 | M |
| CO0041742 | | UPPER VALLEY SANITATION INC. | 403 | 0.015 | 0.03 | M |
| CO0037508 | 310 | USBOR - BLUE MESA SPILLWAY | 0 | 0.000 | 0.00 | I-1* |
| CO0027511 | 300 | USBOR - COLLBRAN JOB CORPS | 0 | 0.000 | 0.00 | M-1* |
| CO0021725 | 100 | USBOR - GREEN MTN GOVERNMENT CAMP | 0 | 0.000 | 0.00 | M-1* |
| CO0021741 | 100 | USBOR - GREEN MTN POWER PLANT | 0 | 0.000 | 0.00 | M-1* |
| CO0034398 | 801 | USDI-NPS-MESA VERDE NAT'L PARK | 0 | 0.073 | 0.00 | M-6* |
| CO0000086 | 220 | USFWS - HOTCHKISS NFH | --- | 11.419 | 0.00 | I-3* |
| CO0000205 | 300 | UTE WATER CONSERVATION DISTRICT | 0 | 0.000 | 0.00 | I-2 |
| COG500010 | 190 | VALCO INC. - GUNNISON CONCRETE | 0 | 1.000 | 0.00 | I |
| COG500134 | | VALCO INC. - VADER PIT | 0 | 0.000 | 0.00 | I-2 |
| CO0042480 | | VIACOM INTERNATIONAL INC. | 4751 | 0.410 | 8.13 | I |
| CO0032841 | 220 | VOLUNTEERS OF AMERICA CARE FAC. | 532 | 0.017 | 0.04 | M |
| CO0042617 | | VOLUNTEERS OF AMERICA CARE FACILITY | 532 | 0.011 | 0.02 | M |
| CO0037206 | 220 | WALKER RUBY MINING CO. INC. | 280 | 0.007 | 0.01 | I |
| COG850029 | | WEAVER ROBERT | 0 | 0.000 | 0.00 | I-6 |
| COG584008 | 100 | WEST GLENWOOD SPRINGS SAN DISTRICT | 356 | 0.149 | 0.22 | M |
| CO0030449 | | WEST MONTROSE SANITATION DISTRICT | 833 | 0.230 | 0.80 | M |
| CO0000213 | 310 | WESTERN FUELS - NEW HORIZON MINE | 2369 | 1.180 | 11.67 | I |
| CO0038024 | 510 | WESTERN FUELS UTAH INC.-DESERADO | 0 | 0.196 | 0.00 | I |
| COG500093 | 220 | WESTERN GRAVEL INC. (SCHNEIDER) | 0 | 0.000 | 0.00 | I-2 |
| COG500088 | | WESTERN MOBILE NORTHERN-EAGLE CHAMB | 0 | 0.000 | 0.00 | I-2 |
| COG500048 | | WESTERN MOBILE NORTHERN-EL JEBEL | 0 | 0.000 | 0.00 | I-2 |
| COG500001 | | WESTERN MOBILE NORTHERN-RUNN RANCH | 0 | 0.000 | 0.00 | I-2 |
| COG500175 | | WESTERN MOBILE NORTHERN-S STEAMBOAT | 207 | 0.075 | 0.06 | I |
| COG500267 | | WESTERN MOBILE NORTHERN-SIEVERS PIT | 382 | 0.199 | 0.32 | I |
| COG500120 | 500 | WESTERN MOBILE NORTHERN-STEAMBOAT | 0 | 0.000 | 0.00 | I-2 |
| CO0031062 | 500 | WHITEMAN SCHOOL | 151 | 0.008 | 0.01 | M |
| COG500123 | 220 | WHITEWATER BLDG - ADAMS PIT | 0 | 0.000 | 0.00 | I-2 |
| COG500122 | 220 | WHITEWATER BLDG - VANWAGNER PIT | 0 | 0.000 | 0.00 | I-2 |
| COG500127 | 220 | WHITEWATER BLDG - WHITEWATER PIT500 | 1080 | 0.029 | 0.13 | I |
| COG500062 | | WILLIAMS FORK COMPANY | 0 | 0.000 | 0.00 | I-2 |
| CO0026051 | 100 | WINTER PARK WATER & SANITATION | 153 | 0.142 | 0.09 | M |
| CO0030635 | 500 | YAMPA TOWN OF | 360 | 0.045 | 0.07 | M |
| NM0027995 | 801 | ARCO MATERIALS INC. | --- | 0.200 | 0.00 | I-1 |
| NM0000019 | 801 | ARIZONA PUBLIC SERVICE CO. - FOUR CORNER | 847 | 9.070 | 32.06 | I-5B |
| NM0020168 | 801 | AZTEC WASTE WATER TREATMENT PLANT | 580 | 0.620 | 1.50 | M-6 |
| NM0028142 | 801 | BLOOMFIELD SCHOOLS WWTP | --- | 0.002 | 0.00 | I-7 |
| NM0020770 | 801 | BLOOMFIELD WWTP | 582 | 0.609 | 1.48 | M-6 |
| NM0029538 | 900 | CARBON COAL (CARBON #2 MINE) | 0 | 0.000 | 0.00 | I-1 |
| NM0029251 | 801 | CARBON COAL (MENTMORE MINE) | 0 | 0.000 | 0.00 | I-1 |
| NM0029319 | 801 | CENTRAL CONS. SCHOOL DIST #22 | 638 | 0.027 | 0.07 | I-6 |
| NM0028584 | 801 | CONSOLIDATION COAL CO. | 0 | 0.000 | 0.00 | I-2 |
| NM0000043 | 801 | FARMINGTON ANIMAS POWER PLANT | | 7.000 | 0.00 | I-4 |
| NM0000051 | 801 | FARMINGTON DRINKING WATER PLANT | 0 | 0.000 | 0.00 | I-2 |
| NM0029572 | 801 | FARMINGTON MUNICIPAL OPERATIONS CENTER | 0 | 0.000 | 0.00 | I-5E |
| NM0028258 | 801 | FARMINGTON SAND AND GRAVEL | | 0.042 | 0.00 | I-4 |
| NM0020583 | 801 | FARMINGTON WWTP | 804 | 4.640 | 15.57 | M-6 |
| NM0020672 | 900 | GALLUP WWTP | 1087 | 2.540 | 11.52 | M-6 |
| NM0029025 | 801 | HARPER VALLEY SUBD. | --- | 0.0087 | 0.00 | I-4 |
| NM0027774 | 900 | INDIAN HILLS MHP | --- | . | 0.00 | I-7 |
| NM0020630 | 900 | NTUA CROWNPOINT WWTP | N/A | 0.000 | 0.00 | M* |
| NM0020613 | 900 | NTUA NAVAJO WWTP | N/A | 0.000 | 0.00 | M-1* |
| NM0020621 | 801 | NTUA SHIPROCK WWTP | N/A | 0.000 | 0.00 | M-1* |
| NM0020605 | 801 | NTUA TOHATCHI WWTP | N/A | 0.000 | 0.00 | M-1* |
| NM0029408 | 900 | PONDEROSA PRODUCTS, INC. | N/A | 0.000 | 0.00 | I-2* |
| NM0028606 | 801 | PUBLIC SERVICE CO OF NM - SAN JUAN | 0 | 0.000 | 0.00 | I-2 |

NPDES PERMITS
COLORADO RIVER BASIN SALINITY CONTROL FORUM
DECEMBER 31, 1994

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATI CODE |
|---|---|---|---|---|---|---|
| NM0020524 | 900 | QUIVIRA MINING COMPANY - CHURCH ROCK | 0 | 0.000 | 0.00 | I-2 |
| NM0023396 | 900 | RAMAH WWTP | 0 | 0.000 | 0.00 | M-7 |
| NM0029505 | 801 | SAN JUAN COAL COMPANY | 0 | 0.000 | 0.00 | I-2 |
| NM0028746 | 801 | SAN JUAN COAL COMPANY (SAN JUAN MINE) | 0 | 0.000 | 0.00 | I-2 |
| NM0000027 | 801 | SAN JUAN CONCRETE COMPANY | 0 | 0.000 | 0.00 | I-3 |
| NM0028550 | 900 | UNITED NUCLEAR CORPORATION CHURCH ROCK | 0 | 0.000 | 0.00 | I-2 |
| NM0020401 | 900 | UNITED NUCLEAR CORPORATION NE CHURCH ROCK | 0 | 0.000 | 0.00 | I-2 |
| NM0020869 | 801 | USDIBIA, CRYSTAL BOARDING SCHOOL | N/A | 0.000 | 0.00 | M* |
| NM0026751 | 801 | USDIBIA, JICARILLA WWTP | N/A | 0.000 | 0.00 | M-1* |
| NM0021016 | 801 | USDIBIA, LAKE VALLEY BOARDING SCHOOL | N/A | 0.000 | 0.00 | M-2* |
| NM0020800 | 801 | USDIBIA, NENAHNEZAD BOARDING SCHOOL | N/A | 0.000 | 0.00 | M-6* |
| NM0020991 | 801 | USDIBIA, PUEBLO PINTADO BOARDING SCHOOL | N/A | 0.000 | 0.00 | M-1* |
| NM0020982 | 801 | USDIBIA, STANDING ROCK BOARDING SCHOOL | N/A | 0.000 | 0.00 | M-2* |
| NM0020958 | 900 | USDIBIA, WINGATE BOARDING SCHOOL | N/A | 0.000 | 0.00 | M-2* |
| NM0028193 | 801 | UTAH INTERNATIONAL INC. - NAVAJO MINE | 0 | 0.000 | 0.00 | I-2* |
| NM0029432 | 801 | YAMPA MINING CO. (DE-NA-ZIN MINE) | 0 | 0.000 | 0.00 | I-2 |
| NM0029475 | 801 | YAMPA MINING CO. (GATEWAY MINE) | 0 | 0.000 | 0.00 | I-2 |
| NV0022055 | 910 | CAL-NEV PIPELINE | 810 | 0.000 | 0.00 | I-2 |
| NV0021261 | 910 | CLARK COUNTY SD AWT | 1294 | 61.90 | 334.25 | M-5A |
| NV0021563 | 920 | CLARK COUNTY LAUGHLIN | 1200 | 0.52 | 2.60 | M-7 |
| NV0022161 | 910 | CLARK CO. S.D. (dewatering) | 2000 | 2.000 | 16.69 | I-5E |
| NV0022331 | 910 | FITZGERALD PROPERTY | 2300 | 0.000 | 0.00 | I-2 |
| NV0022098 | 910 | HENDERSON, CITY OF | 1238 | 1.11 | 5.73 | M-5A |
| NV0022446 | 910 | JOE'S AUTO SERVICE | 2800 | 0.029 | 0.34 | I-2 |
| NV0000078 | 910 | KERR - MCGEE CHEMICAL | 652 | 0.010 | 0.03 | I |
| NV0020133 | 910 | LAS VEGAS, CITY OF | 1096 | 43.10 | 197.12 | M |
| NV0021750 | 910 | LAS VEGAS HILTON | 3000 | 0.120 | 1.50 | I-5E |
| NV0022535 | 910 | LAS VEGAS-FORMER MINAMI TOWERS | 2900 | 0.072 | 0.87 | I-2 |
| NV0022250 | 910 | MONTGOMERY WARD | 4610 | 0.200 | 3.85 | I-5E |
| NV0020192 | 910 | NV DIVISION OF WILDLIFE | 669 | 3.730 | 10.41 | I-5D |
| NV0020923 | 910 | PIONEER CHLOR-ALKALI | 0 | 0.000 | 0.00 | I-2 |
| NV0021636 | 910 | SHELL OIL CO. | 3850 | 0.009 | 0.14 | I-1 |
| NV0021792 | 910 | SOUTHLAND 7-11 | 3220 | 0.030 | 0.40 | I-5E |
| NV0021679 | 910 | SUNRISE COUNTRY CLUB | 5200 | 0.25 | 5.42 | I-5E |
| NV0021717 | 910 | TERRIBLE HERBST | 3630 | 0.015 | 0.23 | I-1 |
| NV0022276 | 910 | TEXACO REFINING | 3380 | 0.043 | 0.61 | I-5E |
| NV0000060 | 910 | TITANIUM METALS | 657 | 3.900 | 10.69 | I |
| NV0022152 | 910 | TRITON ENERGY | 4120 | 0.022 | 0.38 | I-5E |
| NV0022543 | 910 | USA PETROLEUM | 3140 | 0.012 | 0.16 | I-5E |
| NV0021857 | 910 | USNPS-BOULDER BEACH | 1000 | 0.014 | 0.06 | I |
| NV0021865 | 910 | USNPS-CALVILLE BAY | 1000 | 0.004 | 0.02 | I |
| NV0021881 | 910 | USNPS-ECHO BAY | 1000 | 0.004 | 0.02 | I |
| NV0021881 | 910 | USNPS-LAS VEGAS BAY | 1000 | 0.004 | 0.02 | I |
| NV0021890 | 910 | USNPS-OVERTON | 1000 | 0.004 | 0.02 | I |
| NV0022195 | 910 | VALLEY HOSPITAL | 4230 | 0.003 | 0.05 | I-5E |
| UT0021091 | 610 | ALTAMONT, CITY OF | 0 | 0.000 | 0.00 | M-1 |
| UTG040012 | 600 | AMAX COAL COMPANY | 0 | 0.000 | 0.00 | I |
| UT0000167 | 510 | AMERICAN GILSONITE CO | 1700 | 0.200 | 1.42 | I-5E |
| UT0024112 | 600 | AMOCO MINERALS CO - SUNNYSIDE TRIAL | 0 | 0.000 | 0.00 | I-1 |
| UTG040017 | 700 | ANDALEX - IRON SPRING | 0 | 0.000 | 0.00 | I-2 |
| UTG040008 | 600 | ANDALEX - PINNACLE COAL MINE | 1139 | 0.073 | 0.35 | I-5E |
| UTG040018 | 700 | ANDALEX - SMOKY HOLLOW | 0 | 0.000 | 0.00 | I-2 |
| UTG040007 | 600 | ANDALEX WILDCAT LOADOUT | 0 | 0.000 | 0.00 | I-2 |
| UT0024180 | 610 | ASAMERA OIL - HANSEN #1 | 0 | 0.000 | 0.00 | I-1 |
| UT0024511 | 411 | ASHLEY VALLEY SEWER BOARD | 0 | 0.410 | 0.00 | M-4A |
| UTG640003 | 411 | ASHLEY VALLEY WATER & SEWER IDWTP | 0 | 0.000 | 0.00 | M-1 |
| UT0023906 | 710 | ATLAS MINERALS SNOW PROBE MINE | 0 | 0.000 | 0.00 | I-1 |
| UTG040002 | 710 | BHP - KNIGHT COAL MINE | 0 | 0.000 | 0.00 | I-1 |
| UT0024139 | 300 | BIG HORN OIL, INC. | 0 | 0.000 | 0.00 | I-1 |

**NPDES PERMITS**
**COLORADO RIVER BASIN SALINITY CONTROL FORUM**
**DECEMBER 31, 1994**

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATION CODE |
|---|---|---|---|---|---|---|
| UT0023086 | 600 | BLACKHAWK COAL | 0 | 0.000 | 0.00 | I-1 |
| UTG640019 | 802 | BLANDING CULINARY WATER TREATMENT | 0 | 0.000 | 0.00 | M-2 |
| UT0023647 | 600 | BLAZON NO 1 MINE | 0 | 0.000 | 0.00 | I-1 |
| UT0020451 | 510 | BONANZA, CITY OF | 0 | 0.000 | 0.00 | M-1 |
| UT0023761 | 600 | C & W MINE # 1 | 0 | 0.000 | 0.00 | I-1 |
| UT0023663 | 710 | CASTLE VALLEY SPECIAL SERVICE-CASTLEDALE | 1200 | 0.140 | 0.70 | M |
| UT0022489 | 700 | CHAPPELL'S CHEESE COMPANY | 0 | 0.000 | 0.00 | I-1 |
| UTG790004 | 600 | CHEVRON STATION - GREEN RIVER | 0 | 0.000 | 0.00 | I-1 |
| UT0022411 | 600 | CLEAR CREEK UTILITIES, INC. | 0 | 0.000 | 0.00 | M-1 |
| UTG040006 | 710 | CO-OP MINING COMPANY | 360 | 0.222 | 0.33 | I |
| UT0023540 | 600 | COASTAL STATES ENERGY CO-UTAH | 1000 | 0.860 | 3.59 | I-5B |
| UTG070036 | 600 | COCKRELL OIL | 0 | 0.000 | 0.00 | I-1 |
| UT0022616 | 700 | CONSOLIDATED COAL CO-UNDERGROUND | 2800 | 0.640 | 7.48 | I-5E |
| UT0022624 | 700 | CONSOLIDATED COAL CO. - SURFACE MINE | 0 | 0.000 | 0.00 | I-1 |
| UT0024040 | 700 | CONSOLIDATED COAL - EMERY PLANT | 0 | 0.000 | 0.00 | I-1 |
| UTG040016 | 600 | CYPRES BLACKHAWK | 0 | 0.000 | 0.00 | I |
| UT0023736 | 600 | CYPRUS PLATEAU MINING COMPANY | 0 | 0.000 | 0.00 | I-2 |
| UT0000124 | 411 | DENVER AMERICAN PETROLEUM | 1400 | 1.300 | 7.59 | I-5E |
| UT0020095 | 610 | DUCHESNE CITY CORP | 0 | 0.000 | 0.00 | M-1 |
| UTG640014 | 411 | DUTCH JOHN | 0 | 0.000 | 0.00 | M-1 |
| UTG640012 | 600 | E CARBON CITY - SUNNYSIDE CWTP | 0 | 0.000 | 0.00 | M-1 |
| UT0023922 | 300 | ENERGY FUEL RIM MINE | 0 | 0.000 | 0.00 | I-2 |
| UT0000035 | 411 | EQUITY OIL CO | 1200 | 1.500 | 7.51 | I-5E |
| UT0020052 | 710 | FERRON, CITY OF | 1550 | 0.130 | 0.84 | M |
| UT0023876 | 600 | FIRST WESTERN COAL CO- ALETHA #1 | 0 | 0.000 | 0.00 | I-1 |
| UTG040010 | 600 | GENWAL - (WELLINGTON) | 0 | 0.000 | 0.00 | I-2 |
| UT0024368 | 710 | GENWAL RESOURCES, INC-CRANDALL | 600 | 0.000 | 0.00 | I-2 |
| UT0000787 | 600 | GREEN RIVER, CITY OF | 0 | 0.000 | 0.00 | M-1 |
| UT0020958 | 600 | GREEN RIVER, CITY OF | 0 | 0.000 | 0.00 | M-1 |
| UT0022748 | 600 | HIAWATHA | 0 | 0.000 | 0.00 | M-1 |
| UT0021792 | 411 | HOLLANDSWORTH & TRAVIS | 1450 | 0.150 | 0.91 | I-5E |
| UT0021296 | 710 | HUNTINGTON, CITY OF | 3400 | 0.070 | 0.99 | M |
| UT0024015 | 411 | INTERMOUNTAIN CONCRETE | 0 | 0.000 | 0.00 | I |
| UT0024929 | 900 | INTERSTATE ROCK PRODUCT | 0 | 0.000 | 0.00 | I-1 |
| UTG040013 | 600 | IPA—HORSE CANYON | 0 | 0.000 | 0.00 | I-2 |
| UT0020401 | 900 | KANAB CITY CORP | 0 | 0.000 | 0.00 | M-1 |
| UTG070037 | | KERN RIVER GAS PIPELINE | 0 | 0.000 | 0.00 | I-1 |
| UTG130013 | 700 | LONESOME CEDAR TROUT FARM | 0 | 0.000 | 0.00 | I-1 |
| UT0020443 | 411 | MANILA, TOWN OF | 0 | 0.000 | 0.00 | M-1 |
| UT0023396 | 300 | MINERALS EVALUATION & INVEST | 0 | 0.000 | 0.00 | I-1 |
| UT0024945 | 802 | MK - FERGUSON (MEXICAN HAT UMTRA) | 0 | 0.000 | 0.00 | I-2* |
| UT0024694 | 600 | MK - FERGUSON CO (GREEN RIVER UMTRA) | 0 | 0.000 | 0.00 | I-1 |
| UT0020419 | 300 | MOAB, CITY OF | 530 | 1.000 | 2.21 | M |
| UTG079001 | 300 | MOAB INTERIM REMEDIAL | 0 | 0.000 | 0.00 | I-1 |
| UT0023108 | 300 | MOAB READY-MIX CO | 0 | 0.000 | 0.00 | I-1 |
| UTG640007 | 300 | MOAB SALT WTP | 0 | 0.000 | 0.00 | I-1 |
| UT0024503 | 802 | MONTICELLO | 0 | 0.000 | 0.00 | M-2 |
| UTG640015 | 802 | MONTICELLO CITY (CULINARY WATER TREATMENT) | 0 | 0.000 | 0.00 | M-1 |
| UTG040005 | 600 | MOUNTAIN COAL CO. C-VSPUR | 0 | 0.000 | 0.00 | I-2 |
| UTG040014 | 600 | MOUNTAIN COAL CO. - GORDON 3 & 6 | 0 | 0.000 | 0.00 | I-2 |
| UTG040004 | 710 | MOUNTAIN COAL CO. - GORDON CREEK | 435 | 0.007 | 0.01 | I |
| UTG040015 | 710 | MOUNTAIN COAL CO. - HUNTINGTON | 0 | 0.000 | 0.00 | I-2 |
| UTG070025 | | MOUNTAIN FUEL PIPELINE | 0 | 0.000 | 0.00 | I-1 |
| UT0020133 | 802 | MOUNTAIN STATES PETROLEUM | 1000 | 0.030 | 0.13 | I* |
| UTG640008 | | MYTON CITY WTP | 0 | 0.000 | 0.00 | M-1 |
| UT0023001 | 610 | NEOLA TOWN WATER & SEWER ASSOC. | 0 | 0.000 | 0.00 | M-2 |
| UT0024287 | 610 | NORTH FORK SIPHON - SUCCESSFUL BIDDER | 0 | 0.000 | 0.00 | I-1 |
| UT0000094 | 600 | PACIFIC CORP (CARBON) | 2400 | 0.300 | 3.00 | I-5B |
| UT0023426 | 710 | PACIFIC CORP (HUNTER) | 0 | 0.000 | 0.00 | I-1 |
| UT0023604 | 710 | PACIFICORP (DEER CREEK) | 3017 | 0.031 | 0.39 | I |
| UT0023591 | 710 | PACIFICORP (DES BEE DOVE MINE) | 0 | 0.000 | 0.00 | I-2 |

NPDES PERMITS
COLORADO RIVER BASIN SALINITY CONTROL FORUM
DECEMBER 31, 1994

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATI CODE |
|---|---|---|---|---|---|---|
| UTG040009 | 710 | PACIFICORP (HUNTER COAL PREP) | 0 | 0.000 | 0.00 | I-2 |
| UTG040003 | 710 | PACIFICORP - (TRAIL MOUNTAIN) | 0 | 0.000 | 0.00 | I-2 |
| UT0022896 | 710 | PACIFICORP (WILBERG MINE) | 600 | 1.000 | 2.50 | I-5E |
| UT0024163 | 510 | PARAHO-UTE OIL SHALE FACILITY | 0 | 0.000 | 0.00 | I-1 |
| UT0022527 | 610 | PENNZOIL | 0 | 0.000 | 0.00 | I-2 |
| UTG070036 | 600 | PG&E RESOURCES | 0 | 0.000 | 0.00 | I-1 |
| UT0024341 | 600 | PLEASANT VALLEY COAL - KINNEY #2 | 0 | 0.000 | 0.00 | I-1 |
| UT0024589 | 600 | PRICE CITY WTP | 0 | 0.000 | 0.00 | M-2 |
| UT0021814 | 600 | PRICE RIVER WATER IMP DIST | 2000 | 2.100 | 17.53 | M-5A |
| UT0024635 | 600 | PRICE RIVER WTP | 0 | 0.000 | 0.00 | M-2 |
| UT0024295 | 710 | RILDA CANYON MINE - WEST APPA | 0 | 0.000 | 0.00 | I-1 |
| UT0000311 | 802 | RIO ALGOM CORP - LISBON MINE | 0 | 0.000 | 0.00 | I-1 |
| UTG130016 | 700 | ROAD CREEK TROUT | 0 | 0.000 | 0.00 | I-2 |
| UT0000230 | 411 | S.F. PHOSPHATES LTD | 0 | 0.000 | 0.00 | I-1 |
| UT0024228 | 510 | SEEP RIDGE SHALE OIL COMPANY | 0 | 0.000 | 0.00 | I-1 |
| UT0023680 | 600 | SOLDIER CREEK COAL CO | 1000 | 0.850 | 3.55 | I-5E |
| UT0023701 | 710 | SOLDIER CREEK COAL CO HIDDEN VALLEY | 0 | 0.000 | 0.00 | I-1 |
| UTG040011 | 600 | SOLDIER CREEK COAL COMPANY | 0 | 0.000 | 0.00 | I-2 |
| UT0022918 | 700 | SOUTHERN UTAH FUEL | 650 | 1.160 | 3.15 | I-5E |
| UT0021776 | 905 | ST GEORGE, CITY OF | 1270 | 5.600 | 29.68 | M |
| UT0024031 | 600 | SUNCO ENERGY DEVELOPMENT CO | 0 | 0.000 | 0.00 | I-1 |
| UT0022942 | 600 | SUNNYSIDE COAL CO | 0 | 0.000 | 0.00 | I-2 |
| UT0024759 | 600 | SUNNYSIDE COGENERATION ASSOCIATES | 586 | 0.000 | 0.00 | I-2 |
| UT0000761 | 300 | TEXASGULF, INCORPORATED, MOAB POTASH OPERAT | 0 | 0.000 | 0.00 | I-1 |
| UT0024104 | 510 | TOSCO DEVELOPMENT CORP - SAND WASH PROJECT | 0 | 0.000 | 0.00 | I-1 |
| UTG640002 | 610 | TRIDELL - LAPOINT WATER (IDWTP) | 0 | 0.000 | 0.00 | M-2 |
| UT0023370 | 900 | TROPIC TOWN | 0 | 0.000 | 0.00 | M-1 |
| UT0024171 | 411 | TXO PROD CORP - ASPHALT CREEK FED 1 | 0 | 0.000 | 0.00 | I-1 |
| UT0023841 | 610 | TYGER CONSTRUCTION CO, INC-UPPER STILLWATER | 0 | 0.000 | 0.00 | I-1 |
| UT0023931 | 600 | UCO, INC - SCOFIELD MINE | 0 | 0.000 | 0.00 | I-1 |
| UT0023990 | 600 | UCO, INCORPORATED | 0 | 0.000 | 0.00 | I-1 |
| UT0021768 | 411 | UNITED UTILITIES | 0 | 0.000 | 0.00 | I-2 |
| UT0023787 | 411 | UNDERGROUND CONSTRUCT CO-TYZACK PUMPING | 0 | 0.000 | 0.00 | I-1 |
| UT0023094 | 600 | UNITED STATES FUEL CO | 1300 | 1.000 | 5.42 | I-5E |
| UT0023914 | 300 | US ENERGY VELVET MINE | 730 | 0.000 | 0.00 | I-2 |
| UTG640006 | 700 | US NATIONAL PARK (CAPITOL REEF WTP) | 0 | 0.000 | 0.00 | M-1 |
| UTG640004 | 700 | US NATIONAL PARK (GLEN CANYON WTP) | 0 | 0.000 | 0.00 | M-1 |
| UT0021121 | 411 | USBOR - DUTCH JOHN COMMUNITY | 0 | 0.000 | 0.00 | I-1 |
| UT0020338 | 411 | USBOR - FLAMING GORGE DAM | 800 | 0.000 | 0.00 | M |
| UT0024252 | 610 | USBOR - SOLDIER CREEK DAM | 0 | 0.000 | 0.00 | I-1 |
| UT0023035 | 610 | USBOR - STILLWATER | 0 | 0.000 | 0.00 | I-1 |
| UT0024023 | 610 | USBOR UPPER STILLWATER DAM/TUN | 0 | 0.000 | 0.00 | I-1 |
| UTG130001 | 411 | USFWS - JONES HOLE NFH | 174 | 13.000 | 9.44 | I-5D |
| UTG130003 | 700 | UTAH DIV OF WILDLIFE - J PERRY EAGON | 137 | 12.800 | 7.32 | I-5D |
| UTG130007 | 700 | UTAH DIV OF WILDLIFE - LOA | 168 | 8.900 | 6.24 | I-5D |
| UTG130012 | 610 | UTAH DIV OF WILDLIFE - WHITEROCK | 275 | 4.500 | 5.16 | I-5D |
| UT0025003 | 411 | V & W OIL CO | 0 | 0.000 | 0.00 | I-2 |
| UT0022985 | 600 | VALLEY CAMP OF UTAH INC | 500 | 0.180 | 0.38 | I-5E |
| UTG640005 | 905 | VIRGIN WTP | 0 | 0.000 | 0.00 | M-1 |
| UT0023515 | 710 | WESTERN STATES MINERALS CORP | 0 | 0.000 | 0.00 | I-1 |
| UT0024121 | 610 | WHITE RIVER DAM - SUCCESSFUL BIDDER | 0 | 0.000 | 0.00 | I-1 |
| UT0024261 | 510 | WHITE RIVER SHALE OIL CORP | 0 | 0.000 | 0.00 | I-1 |
| UT0023868 | 510 | ZIEGLER CHEMICAL | 1500 | 0.200 | 1.25 | I-5E |
| WY0026671 | 401 | AMERICAN FAMILY INN | 616 | 0.010 | 0.03 | M |
| WY0033448 | 411 | AMOCO SKULL POINT | 0 | 0.000 | 0.00 | I-2 |
| WY0023523 | 500 | ANDOVER RESOURCE CO | 50 | 0.500 | 0.10 | I |
| WY0022128 | 401 | B & R INC | 704 | 0.050 | 0.15 | M |
| WY0022888 | 500 | BAGGS, TOWN OF | 750 | 0.080 | 0.25 | M |
| WY0035173 | 500 | BENSON-MONTIN-GREER | 2900 | 0.001 | 0.01 | I |
| WY0035181 | 500 | BENSON-MONTIN-GREER | 1400 | 0.020 | 0.12 | I |

NPDES PERMITS
COLORADO RIVER BASIN SALINITY CONTROL FORUM
DECEMBER 31, 1994

| NPDES # | REACH | NAME | CONCENTRATION MG/L | FLOW RATE MGD | SALT LOAD TONS/DAY | EXPLANATION CODE |
|---|---|---|---|---|---|---|
| WY0020133 | 500 | BIG PINEY, TOWN OF | 724 | 0.500 | 1.51 | M |
| WY0030261 | 401 | BLACK BUTTE COAL COMPANY | 0 | 0.000 | 0.00 | I-2 |
| WY0028886 | 401 | BLACK BUTTE COAL | 0 | 0.000 | 0.00 | I-2 |
| WY0030350 | 401 | BRIDGER COAL COMPANY | 0 | 0.000 | 0.00 | I-2 |
| WY0035153 | 411 | BURNS BROTHERS INC | 0 | 0.000 | 0.00 | M-2 |
| WY0035114 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0035882 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0035891 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0035904 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0035912 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0035921 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0035939 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0035947 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0036099 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0036129 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0036137 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0036145 | 401 | CELSIUS ENERGY | 0 | 0.000 | 0.00 | I-2 |
| WY0032697 | 411 | CHEVRON - CARTER CREEK GAS PLANT | 0 | 0.000 | 0.00 | I-2 |
| WY0023132 | 411 | CHURCH & DWIGHT CO INC | 1500 | 0.006 | 0.04 | I |
| WY0032727 | 401 | COLO INTERSTATE GAS CO - TABLE | 1240 | 0.021 | 0.11 | M |
| WY0023124 | 401 | DANIEL'S MOBILE HOME PARK | 0 | 0.000 | 0.00 | M-2 |
| WY0021938 | 500 | DIXON, TOWN OF | 750 | 0.010 | 0.03 | M |
| WY0036021 | 500 | DIXON, TOWN OF WTP | 0 | 0.000 | 0.00 | I-2 |
| WY0032701 | 401 | EXXON CORP - LABARGE PROJ | 0 | 0.000 | 0.00 | I-2 |
| WY0032689 | 401 | EXXON CORP - LABARGE PROJ | 0 | 0.000 | 0.00 | I-2 |
| WY0032450 | 401 | EXXON | 0 | 0.000 | 0.00 | I-2 |
| WY0027626 | 401 | FMC WYOMING CORPORATION | 0 | 0.000 | 0.00 | I-2 |
| WY0031763 | 401 | FMC | 0 | 0.000 | 0.00 | I-2 |
| WY0022071 | 411 | FORT BRIDGER | 588 | 0.250 | 0.61 | M |
| WY0022373 | 411 | GRANGER, TOWN OF | 0 | 0.000 | 0.00 | M-2 |
| WY0020443 | 401 | GREEN RIVER, CITY OF | 870 | 0.500 | 1.82 | M |
| WY0000027 | 401 | GREEN RIVER/ROCK SPRINGS JOINT POWERS BD | 0 | 0.000 | 0.00 | I-2 |
| WY0034771 | 500 | HILLS EXPLORATION | 2000 | 0.110 | 0.92 | I |
| WY0000116 | 411 | KEMMERER, DIAMONDVILLE JPB | 388 | 0.035 | 0.06 | I |
| WY0020320 | 411 | KEMMERER, DIAMONDVILLE JPB | 720 | 1.000 | 3.00 | M |
| WY0022080 | 411 | LA BARGE, TOWN OF | 976 | 0.080 | 0.33 | M |
| WY0020117 | 411 | LYMAN, TOWN OF | 686 | 0.320 | 0.92 | M |
| WY0021997 | 401 | MARBLETON | 700 | 0.150 | 0.44 | M |
| WY0030392 | 500 | MERIDIAN OIL COMPANY | 0 | 0.000 | 0.00 | I-1 |
| WY0022896 | 411 | MOUNTAIN VIEW | 546 | 0.150 | 0.34 | M |
| WY0035858 | 401 | NATURAL GAS PROCESSING CO | 0 | 0.000 | 0.00 | I-1 |
| WY0027359 | 500 | NATURAL GAS PROCESSING COMPANY | 0 | 0.000 | 0.00 | I-1 |
| WY0023825 | 401 | WY & WV INC. | 0 | 0.000 | 0.00 | I-2 |
| WY0026841 | 411 | OPAL, TOWN OF | 0 | 0.000 | 0.00 | M-1 |
| WY0020311 | 411 | PACIFICORP | 820 | 5.730 | 19.61 | I-5B |
| WY0020656 | 401 | PINEDALE, TOWN OF | 100 | 1.000 | 0.42 | M |
| WY0000051 | 411 | PITTSBURGH AND MIDWAY COAL MINE | 0 | 0.000 | 0.00 | I-2 |
| WY0024546 | 500 | RESERVE OPERATION CORPORATION | 3500 | 0.002 | 0.03 | I |
| WY0022357 | 401 | ROCK SPRINGS, CITY OF | 760 | 2.000 | 6.34 | M |
| WY0033111 | 411 | SF PIPELINE CO | 832 | 0.014 | 0.05 | I |
| WY0021806 | 401 | SUPERIOR | 0 | 0.000 | 0.00 | M-2 |
| WY0000043 | 401 | UNION PACIFIC RR - GREEN RIVER | 0 | 0.000 | 0.00 | I-2 |
| WY0035025 | 500 | VESSELS OIL & GAS CO | 0 | 0.000 | 0.00 | I-2 |
| WY0000086 | 401 | WYO. FISH AND GAME - DANIEL | 300 | 3.000 | 3.76 | I-5D |
| WY0000094 | 401 | WYO. FISH AND GAME - BOULDER | 300 | 2.000 | 2.50 | I-5D |

# APPENDIX E

## S. 523, Public Law 104-20, and Selected Portions of Public Law 104-127

# One Hundred Fourth Congress of the United States of America

AT THE FIRST SESSION

*Begun and held at the City of Washington on Wednesday, the fourth day of January, one thousand nine hundred and ninety-five*

## An Act

To amend the Colorado River Basin Salinity Control Act to authorize additional measures to carry out the control of salinity upstream of Imperial Dam in a cost-effective manner, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

SECTION 1. AMENDMENTS TO THE COLORADO RIVER BASIN SALINITY CONTROL ACT.

The Colorado River Basin Salinity Control Act (43 U.S.C. 1571 et seq.) is amended—

(1) in section 202(a)—

(A) in the first sentence—

(i) by striking "the following salinity control units" and inserting "the following salinity control units and salinity control program"; and

(ii) by striking the period and inserting a colon; and

(B) by adding at the end the following new paragraph:

"(6) A basinwide salinity control program that the Secretary, acting through the Bureau of Reclamation, shall implement. The Secretary may carry out the purposes of this paragraph directly, or may make grants, commitments for grants, or advances of funds to non-Federal entities under such terms and conditions as the Secretary may require. Such program shall consist of cost-effective measures and associated works to reduce salinity from saline springs, leaking wells, irrigation sources, industrial sources, erosion of public and private land, or other sources that the Secretary considers appropriate. Such program shall provide for the mitigation of incidental fish and wildlife values that are lost as a result of the measures and associated works. The Secretary shall submit a planning report concerning the program established under this paragraph to the appropriate committees of Congress. The Secretary may not expend funds for any implementation measure under the program established under this paragraph before the expiration of a 30-day period beginning on the date on which the Secretary submits such report.";

(2) in section 205(a)—

(A) in paragraph (1) by striking "authorized by section 202(a)(4) and (5)" and inserting "authorized by paragraphs (4) through (6) of section 202(a)"; and

(B) in paragraph (4)(i), by striking "sections 202(a)(4) and (5)" each place it appears and inserting "paragraphs (4) through (6) of section 202";

(3) in section 208, by adding at the end the following new subsection:

"(c) In addition to the amounts authorized to be appropriated under subsection (b), there are authorized to be appropriated $75,000,000 for subsection 202(a), including constructing the works described in paragraph 202(a)(6) and carrying out the measures described in such paragraph. Notwithstanding subsection (b), the Secretary may implement the program under paragraph 202(a)(6) only to the extent and in such amounts as are provided in advance in appropriations Acts."; and

(4) in subsection 202(b)(4) delete "units authorized to be constructed pursuant to paragraphs (1), (2), (3), (4), and (5)" and insert in lieu thereof "units authorized to be constructed or the program pursuant to paragraphs (1), (2), (3), (4), (5), and (6)".

*Speaker of the House of Representatives.*

Strom Thurmond

~~Vice President of the United States and~~
*President of the Senate pro tempore*

APPROVED

JUL 2 8 1995.

William J. Clinton

Public Law 104–20
104th Congress

An Act

To amend the Colorado River Basin Salinity Control Act to authorize additional measures to carry out the control of salinity upstream of Imperial Dam in a cost-effective manner, and for other purposes.

July 28, 1995
[S. 523]

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

**SECTION 1. AMENDMENTS TO THE COLORADO RIVER BASIN SALINITY CONTROL ACT.**

The Colorado River Basin Salinity Control Act (43 U.S.C. 1571 et seq.) is amended—

(1) in section 202(a)— 43 USC 1592.

(A) in the first sentence—

(i) by striking "the following salinity control units" and inserting "the following salinity control units and salinity control program"; and

(ii) by striking the period and inserting a colon; and

(B) by adding at the end the following new paragraph:

"(6) A basinwide salinity control program that the Secretary, acting through the Bureau of Reclamation, shall implement. The Secretary may carry out the purposes of this paragraph directly, or may make grants, commitments for grants, or advances of funds to non-Federal entities under such terms and conditions as the Secretary may require. Such program shall consist of cost-effective measures and associated works to reduce salinity from saline springs, leaking wells, irrigation sources, industrial sources, erosion of public and private land, or other sources that the Secretary considers appropriate. Such program shall provide for the mitigation of incidental fish and wildlife values that are lost as a result of the measures and associated works. The Secretary shall submit a planning report concerning the program established under this paragraph to the appropriate committees of Congress. The Secretary may not expend funds for any implementation measure under the program established under this paragraph before the expiration of a 30-day period beginning on the date on which the Secretary submits such report.";

Reports.

(2) in section 205(a)— 43 USC 1595.

(A) in paragraph (1) by striking "authorized by section 202(a) (4) and (5)" and inserting "authorized by paragraphs (4) through (6) of section 202(a)"; and

(B) in paragraph (4)(i), by striking "sections 202(a)(4) and (5)" each place it appears and inserting "paragraphs (4) through (6) of section 202";

43 USC 1598.

(3) in section 208, by adding at the end the following new subsection:

Appropriation authorization.

"(c) In addition to the amounts authorized to be appropriated under subsection (b), there are authorized to be appropriated $75,000,000 for subsection 202(a), including constructing the works described in paragraph 202(a)(6) and carrying out the measures described in such paragraph. Notwithstanding subsection (b), the Secretary may implement the program under paragraph 202(a)(6) only to the extent and in such amounts as are provided in advance in appropriations Acts."; and

43 USC 1592.

(4) in subsection 202(b)(4) delete "units authorized to be constructed pursuant to paragraphs (1), (2), (3), (4), and (5)" and insert in lieu thereof "units authorized to be constructed or the program pursuant to paragraphs (1), (2), (3), (4), (5), and (6)".

Approved July 28, 1995.

LEGISLATIVE HISTORY—S. 523:

HOUSE REPORTS: No. 104–132 (Comm. on Resources).
SENATE REPORTS: No. 104–24 (Comm. on Energy and Resources).
CONGRESSIONAL RECORD, Vol. 141 (1995):
Apr. 27, considered and passed Senate.
July 11, considered and passed House.

○

## "CHAPTER 4—ENVIRONMENTAL QUALITY INCENTIVES PROGRAM

### SEC. 334. ENVIRONMENTAL QUALITY INCENTIVES PROGRAM.

Subtitle D of title XII of the Food Security Act of 1985 (16 U.S.C. 3830 et seq.) is amended by adding at the end the following:

"SEC. 1240. PURPOSES. 16 USC 3839aa.

"The purposes of the environmental quality incentives program established by this chapter are to—

"(1) combine into a single program the functions of—

"(A) the agricultural conservation program authorized by sections 7 and 8 of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590g and 590h) (as in effect before the amendments made by section 336(a)(1) of the Federal Agriculture Improvement and Reform Act of 1996);

"(B) the Great Plains conservation program established under section 16(b) of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590p(b)) (as in effect before the amendment made by section 336(b)(1) of the Federal Agriculture Improvement and Reform Act of 1996);

"(C) the water quality incentives program established under chapter 2 (as in effect before the amendment made by section 336(h) of the Federal Agriculture Improvement and Reform Act of 1996); and

"(D) the Colorado River Basin salinity control program established under section 202(c) of the Colorado River Basin Salinity Control Act (43 U.S.C. 1592(c)) (as in effect before the amendment made by section 336(c)(1) of the Federal Agriculture Improvement and Reform Act of 1996); and

"(2) carry out the single program in a manner that maximizes environmental benefits per dollar expended, and that provides—

"(A) flexible technical and financial assistance to farmers and ranchers that face the most serious threats to soil, water, and related natural resources, including grazing lands, wetlands, and wildlife habitat;

"(B) assistance to farmers and ranchers in complying with this title and Federal and State environmental laws, and encourages environmental enhancement;

"(C) assistance to farmers and ranchers in making beneficial, cost-effective changes to cropping systems, grazing management, manure, nutrient, pest, or irrigation management, land uses, or other measures needed to conserve and improve soil, water, and related natural resources; and

"(D) for the consolidation and simplification of the conservation planning process to reduce administrative burdens on producers.

"SEC. 1240A. DEFINITIONS. 16 USC 3839aa-1.

"In this chapter:

"(1) ELIGIBLE LAND.—The term 'eligible land' means agricultural land (including cropland, rangeland, pasture, and other land on which crops or livestock are produced), including agricultural land that the Secretary determines poses a serious threat to soil, water, or related resources by reason of the soil types, terrain, climatic, soil, topographic, flood, or saline characteristics, or other factors or natural hazards.

"(2) LAND MANAGEMENT PRACTICE.—The term 'land management practice' means a site-specific nutrient or manure

management, integrated pest management, irrigation management, tillage or residue management, grazing management, or other land management practice carried out on eligible land that the Secretary determines is needed to protect, in the most cost-effective manner, water, soil, or related resources from degradation.

"(3) LIVESTOCK.—The term 'livestock' means dairy cattle, beef cattle, laying hens, broilers, turkeys, swine, sheep, and such other animals as determined by the Secretary.

"(4) PRODUCER.—The term 'producer' means a person who is engaged in livestock or agricultural production (as defined by the Secretary).

"(5) STRUCTURAL PRACTICE.—The term 'structural practice' means—

"(A) the establishment on eligible land of a site-specific animal waste management facility, terrace, grassed waterway, contour grass strip, filterstrip, tailwater pit, permanent wildlife habitat, or other structural practice that the Secretary determines is needed to protect, in the most cost-effective manner, water, soil, or related resources from degradation; and

"(B) the capping of abandoned wells on eligible land.

16 USC 3839aa-2.

"SEC. 1240B. ESTABLISHMENT AND ADMINISTRATION OF ENVIRONMENTAL QUALITY INCENTIVES PROGRAM.

"(a) ESTABLISHMENT.—

"(1) IN GENERAL.—During the 1996 through 2002 fiscal years, the Secretary shall provide technical assistance, cost-share payments, incentive payments, and education to producers, who enter into contracts with the Secretary, through an environmental quality incentives program in accordance with this chapter.

"(2) ELIGIBLE PRACTICES.—

"(A) STRUCTURAL PRACTICES.—A producer who implements a structural practice shall be eligible for any combination of technical assistance, cost-share payments, and education.

"(B) LAND MANAGEMENT PRACTICES.—A producer who performs a land management practice shall be eligible for any combination of technical assistance, incentive payments, and education.

"(b) APPLICATION AND TERM.—A contract between a producer and the Secretary under this chapter may—

"(1) apply to 1 or more structural practices or 1 or more land management practices, or both; and

"(2) have a term of not less than 5, nor more than 10, years, as determined appropriate by the Secretary, depending on the practice or practices that are the basis of the contract.

"(c) STRUCTURAL PRACTICES.—

"(1) OFFER SELECTION PROCESS.—The Secretary shall, to the maximum extent practicable, establish a process for selecting applications for financial assistance if there are numerous applications for assistance for structural practices that would provide substantially the same level of environmental benefits. The process shall be based on—

"(A) a reasonable estimate of the projected cost of the proposals and other factors identified by the Secretary

for determining which applications will result in the least cost to the program authorized by this chapter; and

"(B) the priorities established under this subtitle and such other factors determined by the Secretary that maximize environmental benefits per dollar expended.

"(2) CONCURRENCE OF OWNER.—If the producer making an offer to implement a structural practice is a tenant of the land involved in agricultural production, for the offer to be acceptable, the producer shall obtain the concurrence of the owner of the land with respect to the offer.

"(d) LAND MANAGEMENT PRACTICES.—The Secretary shall establish an application and evaluation process for awarding technical assistance or incentive payments, or both, to a producer in exchange for the performance of 1 or more land management practices by the producer.

"(e) COST-SHARE PAYMENTS, INCENTIVE PAYMENTS, AND TECHNICAL ASSISTANCE.—

"(1) COST-SHARE PAYMENTS.—

"(A) IN GENERAL.—The Federal share of cost-share payments to a producer proposing to implement 1 or more structural practices shall be not more than 75 percent of the projected cost of the practice, as determined by the Secretary, taking into consideration any payment received by the producer from a State or local government.

"(B) LIMITATION.—A producer who owns or operates a large confined livestock operation (as defined by the Secretary) shall not be eligible for cost-share payments to construct an animal waste management facility.

"(C) OTHER PAYMENTS.—A producer shall not be eligible for cost-share payments for structural practices on eligible land under this chapter if the producer receives cost-share payments or other benefits for the same land under chapter 1 or 3.

"(2) INCENTIVE PAYMENTS.—The Secretary shall make incentive payments in an amount and at a rate determined by the Secretary to be necessary to encourage a producer to perform 1 or more land management practices.

"(3) TECHNICAL ASSISTANCE.—

"(A) FUNDING.—The Secretary shall allocate funding under this chapter for the provision of technical assistance according to the purpose and projected cost for which the technical assistance is provided for a fiscal year. The allocated amount may vary according to the type of expertise required, quantity of time involved, and other factors as determined appropriate by the Secretary. Funding shall not exceed the projected cost to the Secretary of the technical assistance provided for a fiscal year.

"(B) OTHER AUTHORITIES.—The receipt of technical assistance under this chapter shall not affect the eligibility of the producer to receive technical assistance under other authorities of law available to the Secretary.

"(C) PRIVATE SOURCES.—The Secretary shall ensure that the processes of writing and developing proposals and plans for contracts under this chapter, and of assisting in the implementation of structural practices and land management practices covered by the contracts, are open to individuals in agribusiness, including agricultural

producers, representatives from agricultural cooperatives, agricultural input retail dealers, and certified crop advisers. The requirements of this subparagraph shall also apply to any other conservation program of the Department of Agriculture that provides incentive payments, technical assistance, or cost-share payments.

"(f) MODIFICATION OR TERMINATION OF CONTRACTS.—

"(1) VOLUNTARY MODIFICATION OR TERMINATION.—The Secretary may modify or terminate a contract entered into with a producer under this chapter if—

"(A) the producer agrees to the modification or termination; and

"(B) the Secretary determines that the modification or termination is in the public interest.

"(2) INVOLUNTARY TERMINATION.—The Secretary may terminate a contract under this chapter if the Secretary determines that the producer violated the contract.

"(g) NON-FEDERAL ASSISTANCE.—The Secretary may request the services of a State water quality agency, State fish and wildlife agency, State forestry agency, or any other governmental or private resource considered appropriate to assist in providing the technical assistance necessary for the development and implementation of a structural practice or land management practice.

16 USC 3839aa–3.

**"SEC. 1240C. EVALUATION OF OFFERS AND PAYMENTS.**

"In providing technical assistance, cost-share payments, and incentive payments to producers, the Secretary shall accord a higher priority to assistance and payments that—

"(1) are provided in conservation priority areas established under section 1230(c);

"(2) maximize environmental benefits per dollar expended; or

"(3) are provided in watersheds, regions, or conservation priority areas in which State or local governments have provided, or will provide, financial or technical assistance to producers for the same conservation or environmental purposes.

16 USC 3839aa–4.

**"SEC. 1240D. DUTIES OF PRODUCERS.**

"To receive technical assistance, cost-share payments, or incentive payments under this chapter, a producer shall agree—

"(1) to implement an environmental quality incentives program plan that describes conservation and environmental goals to be achieved through a structural practice or land management practice, or both, that is approved by the Secretary;

"(2) not to conduct any practices on the farm or ranch that would tend to defeat the purposes of this chapter;

"(3) on the violation of a term or condition of the contract at any time the producer has control of the land, to refund any cost-share or incentive payment received with interest, and forfeit any future payments under this chapter, as determined by the Secretary;

"(4) on the transfer of the right and interest of the producer in land subject to the contract, unless the transferee of the right and interest agrees with the Secretary to assume all obligations of the contract, to refund all cost-share payments and incentive payments received under this chapter, as determined by the Secretary;

"(5) to supply information as required by the Secretary to determine compliance with the environmental quality incentives program plan and requirements of the program; and

"(6) to comply with such additional provisions as the Secretary determines are necessary to carry out the environmental quality incentives program plan.

**"SEC. 1240E. ENVIRONMENTAL QUALITY INCENTIVES PROGRAM PLAN.** 16 USC 3839aa–5.

"(a) IN GENERAL.—To be eligible to enter into a contract under the environmental quality incentives program, an owner or producer of a livestock or agricultural operation must submit to the Secretary for approval a plan of operations that incorporates such conservation practices, and is based on such principles, as the Secretary considers necessary to carry out the program, including a description of structural practices and land management practices to be implemented and the objectives to be met by the plan's implementation.

"(b) AVOIDANCE OF DUPLICATION.—The Secretary shall, to the maximum extent practicable, eliminate duplication of planning activities under the environmental quality incentives program and comparable conservation programs.

**"SEC. 1240F. DUTIES OF THE SECRETARY.** 16 USC 3839aa–6.

"To the extent appropriate, the Secretary shall assist a producer in achieving the conservation and environmental goals of an environmental quality incentives program plan by—

"(1) providing an eligibility assessment of the farming or ranching operation of the producer as a basis for developing the plan;

"(2) providing technical assistance in developing and implementing the plan;

"(3) providing technical assistance, cost-share payments, or incentive payments for developing and implementing 1 or more structural practices or 1 or more land management practices, as appropriate;

"(4) providing the producer with information, education, and training to aid in implementation of the plan; and

"(5) encouraging the producer to obtain technical assistance, cost-share payments, or grants from other Federal, State, local, or private sources.

**"SEC. 1240G. LIMITATION ON PAYMENTS.** 16 USC 3839aa–7.

"(a) IN GENERAL.—The total amount of cost-share and incentive payments paid to a producer under this chapter may not exceed—

"(1) $10,000 for any fiscal year; or

"(2) $50,000 for any multiyear contract.

"(b) EXCEPTION TO ANNUAL LIMIT.—The Secretary may exceed the limitation on the annual amount of a payment under subsection (a)(1) on a case-by-case basis if the Secretary determines that a larger payment is—

"(1) essential to accomplish the land management practice or structural practice for which the payment is made; and

"(2) consistent with the maximization of environmental benefits per dollar expended and the purposes of this chapter specified in section 1240.

"(c) TIMING OF EXPENDITURES.—Expenditures under a contract entered into under this chapter during a fiscal year may not be made by the Secretary until the subsequent fiscal year.

16 USC 3839aa–8.

"SEC. 1240H. TEMPORARY ADMINISTRATION OF ENVIRONMENTAL QUALITY INCENTIVES PROGRAM.

"(a) INTERIM ADMINISTRATION.—

"(1) IN GENERAL.—During the period beginning on the date of enactment of this section and ending on the termination date provided under paragraph (2), to ensure that technical assistance, cost-share payments, and incentive payments continue to be administered in an orderly manner until such time as assistance can be provided through final regulations issued to implement the environmental quality incentives program established under this chapter, the Secretary shall continue to—

"(A) provide technical assistance, cost-share payments, and incentive payments under the terms and conditions of the agricultural conservation program, the Great Plains conservation program, the water quality incentives program, and the Colorado River Basin salinity control program, to the extent the terms and conditions of the program are consistent with the environmental quality incentives program; and

"(B) use for those purposes—

"(i) any funds remaining available for the agricultural conservation program, the Great Plains conservation program, the water quality incentives program, and the Colorado River Basin salinity control program; and

"(ii) as the Secretary determines to be necessary, any funds authorized to be used to carry out the environmental quality incentives program.

"(2) TERMINATION OF AUTHORITY.—The authority of the Secretary to carry out paragraph (1) shall terminate on the date that is 180 days after the date of enactment of this section.

Effective date.

"(b) PERMANENT ADMINISTRATION.—Effective beginning on the termination date provided under subsection (a)(2), the Secretary shall provide technical assistance, cost-share payments, and incentive payments for structural practices and land management practices related to crop and livestock production in accordance with final regulations issued to carry out the environmental quality incentives program.".

SEC. 335. CONSERVATION FARM OPTION.

Subtitle D of title XII of the Food Security Act of 1985 (16 U.S.C. 3830 et seq.) (as amended by section 334) is amended by adding at the end the following:

SEC. 336. REPEAL OF SUPERSEDED AUTHORITIES.

(a) AGRICULTURAL CONSERVATION PROGRAM.—

(1) ELIMINATION.—

(A) Section 8 of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590h) is amended—

(i) in subsection (b)—

(I) by striking paragraphs (1) through (4) and inserting the following:

"(1) ENVIRONMENTAL QUALITY INCENTIVES PROGRAM.—The Secretary shall provide technical assistance, cost-share payments, and incentive payments to operators through the environmental quality incentives program in accordance with chapter 4 of subtitle D of title XII of the Food Security Act of 1985."; and

(II) by striking paragraphs (6) through (8); and

(ii) by striking subsections (d), (e), and (f).

(B) The first sentence of section 11 of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590k) is amended by striking "performance: *Provided further,*" and all that follows through "or other law" and inserting "performance".

(C) Section 14 of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590n) is amended—

(i) in the first sentence, by striking "or 8"; and

(ii) by striking the second sentence.

(D) Section 15 of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590o) is amended—

(i) in the first undesignated paragraph—

(I) in the first sentence, by striking "sections 7 and 8" and inserting "section 7"; and

(II) by striking the third sentence; and

(ii) by striking the second undesignated paragraph.

(2) CONFORMING AMENDMENTS.—

(A) Paragraph (1) of the last proviso of the matter under the heading "CONSERVATION RESERVE PROGRAM" under the heading "SOIL BANK PROGRAMS" of title I of the Department of Agriculture and Farm Credit Administration Appropriation Act, 1959 (72 Stat. 195; 7 U.S.C. 1831a), is amended by striking "Agricultural Conservation Program" and inserting "environmental quality incentives program established under chapter 4 of subtitle D of title XII of the Food Security Act of 1985".

(B) Section 4 of the Cooperative Forestry Assistance Act of 1978 (16 U.S.C. 2103) is amended by striking "as added by the Agriculture and Consumer Protection Act of 1973" each place it appears in subsections (d) and (i) and inserting "as in effect before the amendment made by section 336(d)(1) of the Federal Agriculture Improvement and Reform Act of 1996".

(C) Section 226(b)(4) of the Department of Agriculture Reorganization Act of 1994 (7 U.S.C. 6932(b)(4)) is amended by striking "and the agricultural conservation program under the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590g et seq.)".

(D) Section 246(b)(8) of the Department of Agriculture Reorganization Act of 1994 (7 U.S.C. 6962(b)(8)) is amended by striking "and the agricultural conservation program under the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590g et seq.)".

(E) Section 1271(c)(3)(C) of the Food, Agriculture, Conservation, and Trade Act of 1990 (16 U.S.C. 2106a(c)(3)(C)) is amended by striking "Agricultural Conservation Program established under section 16(b) of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590h, 590l, or 590p)" and inserting "environmental quality incentives program established under chapter 4 of subtitle D of title XII of the Food Security Act of 1985".

(F) Section 304(a) of the Lake Champlain Special Designation Act of 1990 (Public Law 101–596; 33 U.S.C. 1270 note) is amended—

(i) in the subsection heading, by striking "SPECIAL PROJECT AREA UNDER THE AGRICULTURAL CONSERVATION PROGRAM" and inserting "PRIORITY AREA UNDER

THE ENVIRONMENTAL QUALITY INCENTIVES PROGRAM"; and

(ii) in paragraph (1), by striking "special project area under the Agricultural Conservation Program established under section 8(b) of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590h(b))" and inserting "priority area under the environmental quality incentives program established under chapter 4 of subtitle D of title XII of the Food Security Act of 1985".

16 USC 590h–4.

(G) Section 6 of the Department of Agriculture Organic Act of 1956 (70 Stat. 1033) is amended by striking subsection (b).

(b) GREAT PLAINS CONSERVATION PROGRAM.—

(1) ELIMINATION.—Section 16 of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590p) is repealed.

(2) CONFORMING AMENDMENTS.—

(A) The Agricultural Adjustment Act of 1938 is amended by striking "Great Plains program" each place it appears in sections 344(f)(8) and 377 (7 U.S.C. 1344(f)(8) and 1377) and inserting "environmental quality incentives program established under chapter 4 of subtitle D of title XII of the Food Security Act of 1985".

(B) Section 246(b) of the Department of Agriculture Reorganization Act of 1994 (7 U.S.C. 6962(b)) is amended by striking paragraph (2).

(c) COLORADO RIVER BASIN SALINITY CONTROL PROGRAM.—

(1) IN GENERAL.—Section 202 of the Colorado River Basin Salinity Control Act (43 U.S.C. 1592) is amended by striking subsection (c) and inserting the following:

"(c) SALINITY CONTROL MEASURES.—The Secretary of Agriculture shall carry out salinity control measures (including watershed enhancement and cost-share measures with livestock and crop producers) in the Colorado River Basin as part of the environmental quality incentives program established under chapter 4 of subtitle D of title XII of the Food Security Act of 1985.".

(2) FUNDS.—Section 205 of the Colorado River Basin Salinity Control Act (43 U.S.C. 1595) is amended—

(A) in subsection (a), by striking "pursuant to section 202(c)(2)(C)"; and

(B) by adding at the end the following:

"(f) FUNDS.—The Secretary may expend funds available in the Basin Funds referred to in this section to carry out cost-share salinity measures in a manner that is consistent with the cost allocations required under this section.".

(3) CONFORMING AMENDMENT.—Section 246(b)(6) of the Department of Agriculture Reorganization Act of 1994 (7 U.S.C. 6962(b)(6)) is amended by striking "program" and inserting "measures".

(d) RURAL ENVIRONMENTAL CONSERVATION PROGRAM.—

(1) ELIMINATION.—Title X of the Agricultural Act of 1970 (16 U.S.C. 1501 et seq.) is repealed.

(2) CONFORMING AMENDMENTS.—Section 246 of the Department of Agriculture Reorganization Act of 1994 (7 U.S.C. 6962) (as amended by subsection (b)(2)(B)) is amended—

(A) in subsection (b)—

(i) by striking paragraph (1); and

(ii) by redesignating paragraphs (3) through (8) as paragraphs (1) through (6), respectively; and

(B) in subsection (c), by striking "(2), (3), (4), and (6)" and inserting "(1), (2), and (4)".

(e) OTHER CONSERVATION PROVISIONS.—Subtitle F of title XII of the Food Security Act of 1985 (16 U.S.C. 2005a and 2101 note) is repealed.

(f) RESOURCE CONSERVATION.—

(1) ELIMINATION.—Subtitles A, B, D, E, and F of title XV of the Agriculture and Food Act of 1981 (95 Stat. 1328; 16 U.S.C. 3401 et seq.) are repealed.

(2) CONFORMING AMENDMENT.—Section 739 of the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 1992 (7 U.S.C. 2272a), is repealed.

(g) TECHNICAL AMENDMENT.—The first sentence of the matter under the heading "COMMODITY CREDIT CORPORATION" of Public Law 99–263 (100 Stat. 59; 16 U.S.C. 3841 note) is amended by striking "prices: *Provided further,*" and all that follows through "Acts." and inserting "prices.".

(h) AGRICULTURAL WATER QUALITY INCENTIVES PROGRAM.—Chapter 2 of subtitle D of title XII of the Food Security Act of 1985 (16 U.S.C. 3838 et seq.) is repealed.

For additional information please contact:

William J. Miller, Chairman
Colorado River Basin Salinity Control Forum
New Mexico Interstate Stream Commission
Santa Fe, New Mexico 87504-5102
ph. (505) 827-6103

Jack A. Barnett
Executive Director
Colorado River Basin Salinity Control Forum
106 West 500 South, Suite 101
Bountiful, UT 84010-6232
ph. (801) 292-4663

Timothy J. Henley
Work Group Chairman
Colorado River Basin Salinity Control Forum
Arizona Department of Water Resources
500 North Third Street
Phoenix, AZ 85004-3903
ph. (602) 417-2442